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CATTLE DISEASE IN JAMAICA.

REPORT BY PRINCIPAL W. WILLIAMS, NEW VETERINARY COLLEGE, EDINBURGH.

Colonial Secretary's Office,
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THE Major-General administering the Government directs the publication, for general information, of the following report by Professor W. Williams, F.R.S.E., F.R.C.V.S., etc., on Cattle Disease in Jamaica.

By command,
FRED. EVANS, *Colonial Secretary.*
KINGSTON, September 23rd, 1896.

To the Honourable the Colonial Secretary:

SIR,—I have the honour to inform you for the information of His Excellency the Governor, that accompanied by my son, T. A. Williams, M.B., C.M., who is acting as my secretary and assistant, I landed at Kingston on July 30th, and after consultation with the Honourable J. Allwood, Acting Colonial Secretary, Mr. George Douet, Secretary for the Jamaica Agricultural Society, Mr. Adam Roxburgh, Mount Pleasant, St. Ann's, Chairman of Cattle and Horsekind Committee of said society, and my son, Dr. Williams, it was arranged that the parish of St. Ann, where the disease was said to be still existent in a severe form, was the first district to be investigated and that the Moneague Hotel was to be the first centre of our operations. After staying one night at Kingston we proceeded to Moneague on Saturday, August 1st, and the following Monday we, accompanied by Mr. Adam Roxburgh, commenced our investigation and found the disease to prevail, in a chronic form, upon many "pens" in various parts of the parish.

During the month of August we visited the parishes of St. Ann, St. Mary, Trelawny, and Portland, and found the disease upon most of the pens visited. I may state, however, that we found no chronic wasting disease in Trelawny. We investigated one outbreak of acute disease, having a great resemblance to the acute form of Texas fever, upon this pen. We also examined sugar estates and found that the working oxen on those estates were peculiarly free from the "wasting disease." I was much impressed with this fact, and considered that the better feeding increased the vital resistance of the animals to the action of exciting causes of the disease, but found that this could not be

considered to be the case as we met with the disease on sugar estates in other parishes, that had carried off on one estate 120 head in about five weeks out of 200 working cattle.

We found that the fatal disease termed anthrax, splenic apoplexy, or splenic fever had been very fatal upon two other sugar estates that we visited; we also found that the organism, *Bacillus Anthracis*, causing the disease, existed in the waste dunder* and that the ponds were imperfectly protected and that during heavy rains the overflow from the waste dunder had access to the drinking ponds. There was in one case an attempt made to prevent this, a shallow drain being made at the lower end of the waste dunder heap, but this drain during heavy rains would be easily overflown, and the contaminated water could flow into the pond. The water in this pond was impure, and we were able to detect a few bacilli in a sample which we took away with us, and to grow them as well as those found in the dunder in "cultivation media," that is to say, certain soups and jellies prepared for the purpose, and brought with us from Scotland. We arrived at another sugar estate immediately after a heavy shower of rain, and found a boy cleaning out an open drain at the bottom of the yard. We took a sample of the dunder thrown out of the drain, and found the anthrax bacilli in smaller numbers than in the other case. Occasional cases of anthrax had prevailed here for some years.

The skimmings of a boiler, *i.e.*, boiling dunder, was examined and found to be free from bacilli, so we conclude that the bacilli are in the ground upon which the dunder is laid, and that during the rains some of them are washed out into the drinking ponds, and become mixed with the dunder which forms a suitable soil for their further development. This source of danger should be kept in view and means taken, upon estates where anthrax prevails, to destroy the infected dunder.

During the whole of the month of August we found that, with four exceptions, the symptoms during life and the *post-mortem* appearances, in all the cattle examined were peculiarly identical. The symptoms in the four exceptions referred to, differed in many essential particulars from those presented by the "wasting disease." The first case (on a sugar estate), was a brindled steer, very emaciated, hide bound and on examination gave evidence of lung disease, said to have no cough, but he coughed during our visit, and was very feeble. His temperature, however, was only 101°F., and his pulse 55 per minute. The owner said he had tuberculosis, and that he had lost others which had suffered in a similar way. Upon making a *post-mortem* examination it was found that the disease was broncho-pneumonia: that is to say, inflammation of the bronchial tubes and the substance of the lungs arising from an ordinary cold, or as a result of previous invasion of the lung worm *Strongylus Micrurus*. I may here state that I have been informed some cattle have been condemned in the island as having had the contagious lung disease, *pleuro-pneumonia contagiosa*, the appearances of which are not dissimilar to those of the one under consideration. I therefore take the liberty of suggesting to "meat inspectors" that they should make themselves acquainted with the differences between the two diseases, as much injury might be inflicted upon the colony if mistakes of this kind were repeated. The second case, which scarcely bears upon the subject of this report, left apparently well at night, was found dead in the pen in the morning (supposed to have died from anthrax). The *post-mortem* revealed nothing particular except an inflammatory ulcer in the fourth stomach, which, along with the other three stomachs and bowels, were greatly distended with gas. This formation of gas might have been *post-mortem*, but I was of opinion that it had occurred previous to, and was the cause of, death.

The third exception occurred in the parish of Trelawny, where we were

* A thick brown fluid, the refuse of rum manufacture.

informed that five cattle had died within the last few days, but we could not obtain a very satisfactory account of the symptoms and *post-mortem* appearances.

There was one sick two-year-old steer alive and presenting the following symptoms:—Great dejection, accelerated breathing, tucked-up belly; pulse 53 per minute; temperature 103°F. The mucous membranes of the mouth, nose, and eyes were of a deep yellow colour, urine tinged with bile, rumination suspended, but the bowels were acting normally; the most important symptom here was the yellowness of the mucous membranes, pointing to a diseased or disordered condition of the liver, and on *post-mortem* examination this was found to be the case, the organ being enlarged, of a pale yellow colour, and when cut into, the cut surface presenting a uniform brownish yellow colour, discharging a little thick coloured blood from the cut veins. In this particular, and in the appearance of the blood under the microscope, this case presented two of the most important conditions of Texas fever; but other conditions observed in that disease, with the exception of a general bloodlessness (anæmia), were absent. The animal, however, was covered with ticks, many of them being what is described to me as being previously unknown in this country.

The fourth exception was a working Carthagenian bullock which had been in this country four years, met with near Port Antonio, but not on a sugar estate. On examination, previous to slaughter, symptoms of extensive lung disease were detected, in addition to a yellowish pallor of the mucous membranes, with cough and hurried respirations; the temperature was 102·5° F., respiration 94, short catching, and pulse 80 per minute.

The *post-mortem* examination of this bullock revealed an immense number of flukes in the liver and of strongyles in the lungs, one side of which being consolidated and presenting a marbled appearance—the bronchial tubes being filled with strongyles. The remaining lobes containing some strongyles were enlarged, distended with air—in fact, emphysematous—by having to admit some extra air to compensate for the imperviousness of the other lobes. This animal was covered with ticks, which were mostly of the reddish brown colour characteristic of the new variety. It was observed, as we approached this part of the island, that this kind of tick become much more numerous, whilst the silver back and the blue tick were found in smaller numbers. It was also found that foreign and Colombian cattle are here in greater numbers.

The pastures on this pen are exceedingly damp, many of them being morasses or bogs, favourable to the development of the strongyles and of flukes; several other cattle on this pen presented similar symptoms. [*See* Appendix No. II.]

In pursuing this investigation I have had to consider various theories and opinions as to the cause and origin of the "wasting disease," and amongst them I may consider the following:—

1st. Drinking pond water.
2nd. Tuberculosis.
3rd. Starvation.
4th. In and in breeding.
5th. Strongylus Contortus and other strongyles.
6th. The influence of ticks following diseased condition.
7th. The direct effect of the tick.
8th. Texan fever.

1st. DRINKING POND WATER.—So far as the "wasting disease" is concerned, this has no effect, as the disease is as common amongst cattle that drink the water from springs and running streams. There are, however, two sources of danger in this water, namely, contamination with the anthrax

bacilli as already referred to, and with the strongylus contortus referred to hereafter. I may, however, state that the water in most of the ponds was in a semi-putrid state. In some ponds low forms of vegetation were found in the form of a green scum; these are varieties of protococci and algæ, and it is asserted by bacteriologists that these low forms of vegetation form certain anti-ptomaines, that is to say, antidotes to other growths which develop poisonous ptomaines, *i.e.*, virulent or poisonous products. Anyhow, their presence in the water does no harm, and their growth should be encouraged. The water in all the ponds is soft and deficient in saline materials, and it is stated, a statement which we have corroborated, that cattle thrive better and are freer from disease when the drinking water is brackish; this points to a deficiency of saline matters in the food and water. At Rio Bueno we had the opportunity of examining some cattle that were resting near the sea; they looked uncommonly well, and were free from ticks. These cattle drank brackish water, and preferred it to other water.

2nd. TUBERCULOSIS.—I am glad to say that we found no evidence of tuberculosis in any of the animals examined in the parishes of St. Ann, St. Mary, Portland, Trelawny, St. Elizabeth, Manchester, St. James, Hanover, Westmoreland, Clarendon, St. Catherine or St. Thomas, and we had no opportunity of seeing any in the remaining parishes of Kingston and St. Andrew.

The cattle owners generally ought to be very thankful for the absence of this dreadful disease, and in order to protect the Island, a period of quarantine should be imposed upon all newly-imported cattle, and the tuberculin test applied particularly to those from Great Britain, as tuberculosis prevails there to an enormous extent among the most highly-bred and costly animals, as well as less costly stock. In the city of Edinburgh, over 40 per cent. of the cattle are tubercular.

I need not point out that tuberculosis is not only contagious and infectious amongst cattle, but that its bacillus is the great source of consumption (phthisis) in human beings.

3rd. STARVATION.—The disease is attributed by some to want of food. I cannot support this view, so far as the quantity of food is concerned, as in the dry parishes, the pastures, though bare for want of rain, the cattle seemed well filled with food, and in those that were examined *post-mortem*, the stomachs (with the exception of the 4th, which was almost empty in some cases) were fairly filled; so far as quantity is concerned, there had been sufficient in the driest district; but as regards quality—that is to say, as regards the constituents contained in the food—there is no direct evidence, and that will have to be further investigated. I may state, however, that the food found in the stomachs, in the dry districts of the country, was of a hard, indigestible nature, containing much woody fibre, and that the walls of the stomachs were attenuated and pallid, seemingly having but little muscular power, as if exhausted with a continuance of over work in overcoming the indigestibility of their contents.

4th. IN AND IN OR TOO CLOSE BREEDING.—Maintained by some that, as a result of too close breeding, the constitution of the cattle has been weakened, and that the disease is merely an evidence of weakness of constitution.

There are no facts to support this assertion: indeed, the reverse is the case, the herds being composed of many breeds, from fairly typical Highlanders, many examples of Devon, some of Hereford type, and a few fairly-bred shorthorns, in addition to Indian cattle, the old Brahmin and lately imported Mysores, of which I cannot speak too highly, as from the evidence brought forward they seem to resist the attack of ticks, and to have immunity from the disease.

I am of opinion that the Jamaican cattle are of a peculiarly strong and

hardy character; had it been otherwise, the mortality from the "wasting disease" would have been more disastrous.

5th. THE STRONGYLUS CONTORTUS.—This parasite was found in eleven cases out of twenty-two examined *post-mortem* during August, but with the exception of two cases, in a three-year-old steer and a calf about three months old, they were few in number, and even in the calf and steer they were not sufficiently numerous to cause great danger to health. Altogether, the Contortus was found in about 40 per cent. of the stomachs examined during the investigation in August and September.

The ordinary habitat of the strongylus contortus is the fourth stomach of the sheep, goat, argali and chamois. It has rarely been found in that of the ox tribe. Neuman, in his book on parasites, says that Railliet and Lucet have found it in the abomasum, fourth stomach, of a heifer, and that he, himself, found it in that of a cow. It was unknown in Scotland until discovered in the sheep by myself in 1885. It is found in the fourth stomach, and subsists by sucking the blood of its host which it abstracts from the mucous membrane of that stomach, and also, in my opinion, upon the digested contents of that organ. When filled with the blood of its host, it is of a reddish-brown colour, but when its intestines are empty of blood, it is white. Its integument (skin) is marked with five transverse lines (striæ) and longitudinally by 40 to 50 ridges. The male is smaller than the female, being from ½ in. to 1 in. long, whilst the female is from 1 in. to 1½ in. in length. Both the male and female are narrow thread-like worms, and are difficult to find in the contents of the stomach; but if, after opening the stomach, the food be not allowed slowly to escape and carefully watched, the parasites may be seen wriggling in every direction, coming to the surface, then disappearing to come up again, and rushing about like minnows in a shallow pool. So far as my observations go, they do not cling to the mucous membrane with any tenacity. The animal should be immediately examined after death for this worm, as it is quickly destroyed and digested in the stomach of its host after death.

In three cases another kind of parasite was found attached to the inside of the upper part of the windpipe; these are real blood-suckers, and detached with difficulty. They did not seem to cause any inconvenience to the host. These worms are not described in text-books, but they will be further studied on my return to Scotland.

The strongylus contortus, according to the observations of Railliet (*Le Strongyle Contourie*) is ovoviviparous. The embryos will not develop in pure water, but die in the course of a few weeks; they, however, grow rapidly in muddy water, and after several moultings, reach a state of development in which they are capable of being completely perfected in the stomach of ruminants.

German observers state that the disease induced by this parasite, is often complicated with verminous bronchitis, hoose or husk, inflammation caused by worms in the lungs, and the German veterinarian, Gurlt, supposed that the "lung worm" was a modification of that of the stomach. In Scotland, the disease induced by the contortus appeared in the early spring months in a flock of sheep which had suffered from verminous bronchitis—hoose or husk—in the autumn. Many German veterinarians have reported dangerous outbreak of disease in young sheep caused by this parasite, but Neuman states that it has only been once reported dangerous in France, and once in Scotland, and always amongst sheep.

Knowing that this parasite was as a great rule found in sheep and goat in Europe, I was surprised not to hear of it as a cause of disease in these animals in Jamaica, and concluded that like the tick—which in Scotland seldom attacks cattle, but is common amongst sheep in some districts, it dis-

played a preference for cattle. I had, however, an opportunity of seeing a flock of sheep near Browns Town which were in a most unhealthy and unthrifty condition with the characteristic symptoms of the disease caused by the Contortus well marked in some of them. These symptoms are great pallor of the visible mucous membranes, namely: the membranes lining the mouth, nostrils, and eyes, a swollen dropsical condition of the nose and lower part of of the face and in some cases a collection of fluid in the space between the two sides of the lower jaw. The animal is languid, has little or no appetite, but has intense thirst, sometimes colicky pains and as the disease advances diarrhœa, the stools being often dark-coloured and fœtid. (Some ticks were found on these sheep).

The owner of the flock kindly consented to have the worst case—a hogg, about 15 months, slaughtered. On *post-mortem* examination the fourth stomach contained several thousands of the Strongylus Contortus wriggling about in every direction. This parasite is said to commit great havoc amongst lambs and young sheep, particularly in Pennsylvania. I wish therefore particularly to point to the possibility of outbreaks of disease caused by this worm amongst sheep and goats, also to suggest the desirability of taking measures to destroy it. It was not found in those districts where cattle had running or spring water to drink, only where they are confined to ponds. Bearing in mind what is already stated, that the embryos cannot live and develop in pure water, the importance of keeping the ponds as clean as possible becomes self evident. Since my arrival in Jamaica I have read that the *contortus* is committing great havoc amongst the lambs in the south of England.

I have also had the opportunity of witnessing the ravages of this parasite in the goat. My attention being called to the fact that many of these animals had died in the parish of Clarendon from an unknown disease, and at the request of a resident of that parish, I, accompanied by Mr. Roxburgh and several gentlemen residents in that parish, examined some goat pens and found that the loss had been very heavy. We had a kid, which was in a greatly debilitated condition, slaughtered and examined, and found the strongyles in large numbers in the fourth stomach. The pond from which the goats obtained their drinking water was, I was informed, very dirty, consisting, in fact, of what appeared as liquid mud. I was also informed that the people who owned these goats drank the water out of the same pond. I am of opinion that the sanitary authorities should take charge of watering ponds generally, and see that they are periodically cleaned, as they may not only harbour the parasites injurious to the domesticated animals, but others injurious to human beings.

Several remedies are recommended for the destruction of these parasites within their host, such as Chaberts' Empyreumatic Oil, alone or mixed with oil of turpentine, picrate of potash, etc., etc. It appears, however, that Dr. Hutcheon, Chief Veterinary Inspector for the Cape Colony, has found the sulphate of copper an efficacious remedy, and he prescribes one pound sulphate of copper dissolved in 6½ gallons of water in half-pint doses after the beast has been kept fasting for several hours; for a sheep one-third of this may be given.

This medicine has been given to many cattle in the island for the cure of the "wasting disease," and some say that it has done good whilst others state that it has no effect. Sulphate of copper has some tonic or strengthening effect, and consequently might have proved beneficial, but it can have little or no effect upon the true "wasting disease."

As the embryos of the *Strongylus contortus* only grow in impure water, on wet pastures and marshy places, attempts should be made to alter these conditions. It is also proved that common salt has a powerful effect upon this

parasite: the borders of ponds, damp pastures, etc., known to harbour the worm should be occasionally dressed with this article.

It will be observed that out of twenty-two cattle examined after death, during August, these worms were only found in eleven. I wish to draw particular attention to this fact, as it has been supposed that this worm was the cause of the wasting disease, and some have asserted that although the worms were not present in the cattle, they had been there, and had been removed by medicine, and that the existence of the disease was only a continuance of the damage done by the worms. In answer to these assertions, I have to state that the disease caused by the *Strongylus contortus* disappears in a short time after the worms have been destroyed; and in further corroboration of these conclusions I had the opportunity of making a *post-mortem* of a calf three weeks old, which along with its dam, was slaughtered suffering from the wasting disease and covered with ticks, and found the characteristic anœmia or bloodlessness, with the solid organs healthy, and no *Strongylus contortus*, although its dam had a few in her stomach. This cow had no milk and the calf although only three weeks old had its stomachs fairly filled with solid food, and had a few large round worms *Ascaris Lumbricoides* in the intestines.

I attach great importance to this as it points along with other cases cited when river water was drank that the "wasting disease" exists independently of the *Srongylus contortus*.

6th. THE RESULTS OF TICKS FOLLOWING SOME PREVIOUS DISORDER OR DISEASE.—A general opinion prevails that ticks do not, at least in any great numbers, attack healthy cattle, and that those which they infest are already under the influence of some disease or in a disordered condition.

This opinion is true to a very limited extent only; but is in accordance with the general law, that parasites of all kinds seem to prefer the weak to the strong, but, and particularly in this disease, it does not follow that the healthy and strong are exempt from attack. I may however point out that newly calved cows are very liable to attack, and not infrequently the mother is seen covered with ticks and presenting signs of disease, while the offspring is comparatively free from ticks and, if old enough to eat sufficient grass, to maintain its health, and present a fairly thrifty appearance, but if too young for this and the dam short of milk—as is too frequently the case—the calf becomes emaciated, sometimes covered with ticks, sometimes fairly free from the parasites, but suffering from anæmia, "white sores" and other conditions pointing to actual starvation.

The "*white sores*," also called Bovine farcy, above referred to, consist of varying-sized abscesses and ulcers upon many parts of the body, particularly the dewlap, the under-parts of the chest, in front of the shoulder, and on the fetlocks and hocks. They result from accidental wounds or bruises and from bites of ticks, and, consequent upon the anæmic (bloodless) condition of the patient, the process of healing becomes impossible; in fact, if a breach in the skin occurs from any accidental circumstance, instead of the healing process taking place, the tissue surrounding such breach is too bloodless and feeble to resist the microbes of suppuration; the destructive process consequently extends from the circumference of the original wound or puncture to the surrounding tissues, and the sore which at first might have been a very small one, becomes an unhealthy looking wound the size of half-a-crown, or even larger, with pale, unhealthy, and ragged borders, the surrounding skin being often of a tough, leathery consistence, and presenting little or no signs of vitality, the ulcerative process at the same time extending deeply into the subcutaneous structures, forming cavities of varying dimensions, generally filled with the larvæ of flies, "maggots or large flyblows," which cause much

irritation, the discharge of fœtid material and increase the fever and tendency to death.

Very few of these calves recover, and certainly when they have reached that stage in which I have generally seen them, recovery seems an impossibility.

The treatment adopted is barbarous and absurd, being entirely local, the remedies calculated to diminish the reparative powers of the economy, and thus increase the destruction of the tissues surrounding the wound.

It should be remembered that the inability or failure to repair is due to the fact that blood, the conveyer of nutritive materials to all parts of the body, is deficient in those materials, that the animal is in a condition of starvation, and that whilst such is the case, it is as reasonable to expect the parts to be restored to their natural healthy condition as it is to expect a man to repair a ship or a house without materials, therefore the first step in combating this very serious disease—the result of which will be felt hereafter as the mortality has been 20, 40, or even 100 per cent.—is to supply the calf with reparative materials in the form of food, that of the mother being totally inadequate whilst suffering from the disease or even from dryness of the pastures. There are many articles in the Island that might be utilised for this purpose, such as molasses, cocoanuts, breadnut leaves, cane tops, cornmeal, wheat, middlings, etc.

I may mention that there is a disease on the continent of Europe, called the "summer sores of horses," which bears some resemblance to the "white sores" of Jamaican calves, and due, at least in a great number of cases, to the presence of a larval nematode in the substance of the skin; and the sores in which they are found—like the "white sores" of calves, and sores generally seen both in horses and cattle in Jamaica—have a tendency to spread: they then become covered with a soft pulpy layer of granulations having a reddish-brown colour, intermixed with serous pus, or a pulpy matter that covers the whole.

At first, the sores are irregular, but, gradually extending, they assume a circular form, having a varying diameter, and situated particularly upon those regions most subject to wounds and bruises, such as those on which the harness rests, and upon the extremities of the limbs. Unlike the "white sores," this disease gives rise to intolerable itching, a symptom which I have not observed in the calves here; but, like the "white sores," it is difficult to cure, many agents having been tried, the majority proving of no value. Caustics constantly fail, but good results have been obtained from the application of yellow sulphide of arsenic spread very thinly over the surface of the sore, one application being sufficient to cause a scab to form, which becomes detached in eight or ten days, leaving a simple, healthy-looking wound. Success has also been obtained by the application of chloroform and iodoform applied every day, afterwards protecting the parts by a layer of collodion, or what I usually employ as being much cheaper—a rapidly-drying varnish (spirit varnish). Similar treatment might advantageously be applied here, not forgetting what has been already stated that reparative materials must be supplied by suitable food, and the parts protected from flies, and also that the process of repair is much more effective when the animal is kept in a shed, and prevented from exhausting its already enfeebled powers.

Calves, whilst not immune from the wasting disease, seem to be less liable to it than older animals. I have noticed several instances in which the dam was suffering from the disease and covered with ticks, that the calf has seemed healthy and having but few ticks upon its skin; the converse is however sometimes the case, and the calf will be found suffering from disease,

covered with ticks, while the dam is apparently well and fairly free from ticks; but this is less frequently met with than the converse condition.

These facts agree with the observations of Dr. Theobold Smith and F. L. Kilborne (investigations into the nature, causation and prevention of Texas or southern cattle fever, Washington, 1893), who state: "In general, calves are not insusceptible to Texas fever; but the disease is milder and the mortality is lower than with those of more than one year old;" and then again: "Young animals seem to be largely proof against a fatal infection, altnough they are by no means insusceptible. The repeated mild attacks to which they are subject finally makes the system indifferent to the virus. The introduction of young animals into the permanently infected territory, though not without danger, is far safer than the introduction of animals older than one year. The danger of fatal infection increases with the age of the animal and is very great in cows over five or six years old.

The ages of the calves experimented upon in America, were from five weeks to six months. Those under two months old died, whilst the mortality seems to have been less on those of a greater age, except in the case of the calf, six months old.

I refer to these facts and experiments in order to point out the importance of assisting a calf over an attack of disease by supplementing the supply of its natural food, *i.e.*, milk, when that is defective in quality or deficient in quantity, and thus prevent the occurrence of white sores and a fatal termination.

8. THE DIRECT EFFECT OF TICKS in causing the disease in both strong and debilitated cattle. As already stated, cattle enfeebled from any cause seem to form a more favourable habitat to the ticks, and are more predisposed to the disease than the healthy and strong, but the healthy and strong have no immunity, as they are frequently attacked, and succumb. I have therefore arrived at the conclusion, after carefully weighing all the facts and circumstances which have been brought before me, both directly and indirectly, that the disease is due to the attacks of ticks, and (with the exception of the Mysore cattle) that no cattle have immunity. Some are but slightly invaded by the ticks; some, owing to strength of constitution or some other cause, seem to throw off the results with but little appreciable suffering or damage, whilst in others attacks are acute, and terminate fatally in a few days after the first manifestation of the symptoms. And I re-assert that after carefully weighing the evidences, I have arrived at the conclusion that the disease is, as presented to me, a modified form of Texas fever now prevailing in other parts of the world besides Jamaica, and that it is carried from place to place by ticks.

The disease in itself cannot be called contagious or infectious; there is, therefore, no necessity for burning the carcases of dead animals.

Animals suffering from the disease, if *perfectly freed from ticks*, do not transmit the disease, no matter how severe the attack might be; but if invaded by the parasite, the pastures on which they graze are first contaminated by the mature ticks which drop off their bodies and in about seven days lay their eggs in the grass, which hatch in about another twenty days—sometimes a longer period—and the young ticks are at once ready to crawl on the cattle. If these figures are added together, it will be found that the shortest possible time, after tick-infected cattle are turned out into a field, in which the disease may appear is about thirty-seven days, but the period of first attacks may be much longer than this, as all the eggs are not laid upon the same day; there is, therefore, a daily hatching for consecutive days. (Own observations: Texan ticks placed in bottle on 5th September; commence to lay on 17th.)

It is rather unfortunate that during the earlier part of our visit the animals examined, both prior to and after death, were suffering from the disease in its chronic form, and in which many of the marked symptoms and *post-mortem*

conditions of Texas fever were absent; but during the latter portion of the visit more decidedly marked signs of that disease were observed.

One characteristic sign of acute Texan fever (as described by the American writers), red water or blood-coloured urine, hæmoglobinuria was absent. They state that "the one sign regarded as peculiar and pathognomonic (characteristic) in this disease is the discharge of urine having the colour of blood. This colour is not due to a discharge of blood from the kidneys and subsequent breaking up of the red corpuscles, but to a filtration of the colouring matter of broken down red corpuscles (hæmoglobin) already in solution in the circulation, into the urine in the excretory structures of the kidneys." This statement is perhaps too obscure to be easily understood. It means that the red blood cells are broken up in the blood vessels and that the colouring matter thus set free tinges the fluid portion (which is naturally colourless) and which when excreted by the kidneys presents a red appearance. Now, this sign considered so important by the American authors, and stated by them to be present in 33 out of 46 cases, did not present itself except in one doubtful case. The animal (a cow) was suffering from a very prolonged, but not severe attack, and had latterly passed red water. I was of opinion, however, that this tinge was due to some injury to or breaking down of the urinary apparatus, as the colour was due to actual (coagulating) blood and not to the colour of broken down blood cells. The information obtained from all who were acquainted with the disease that red water is not a symptom would have caused me much surprise had I not known in Australia red water is only observed after the animal has been travelled. (One of the constituents of the blood absent in health, viz., albumen, was found in all the specimens of urine examined.) Other signs of Texan fever, such as enlargement of the spleen and of the liver, sero-sanguinous, or red watery condition of the fat, etc., about the kidneys were absent. The condition of the spleen has in no instance shown the enlargement described by the American writers, but the liver in some three cases has been slightly enlarged, and presenting a pale yellow mottled colour due to bile congestion and fatty degeneration. When cut into, the tissue presented a mottled appearance throughout, and was bloodless, whilst the larger blood-vessels discharged a very dark-coloured and thick blood. But whilst this characteristic of acute Texas fever was present in these few cases, the liver itself did not present the three to five pounds enlargement over that of health, as stated to be the case in that disease; in fact, we did not find one liver to be appreciably increased in weight, but the bile was generally increased in quantity and mixed with mucus. The appearance of the heart also differed from that described in Texas fever, the petechial spots passing along the intra ventricular groove and near the base extravasation, etc., being absent, but the heart itself was found to be pale and undergoing a retrograde change, as seen in the Texas disease after the subsidence of the fever.

Temperature.—In most cases there was more or less elevation of temperature; in one case it was as low as 101·4° F.; this was in a very emaciated and debilitated calf. As a rule, however, the temperature ranged from 103·5° to 106.8 F.

The appearance of the Blood and Tissues.—With the exceptions already described, the organs and tissues did not to the naked eye materially deviate from those seen in health. There was bloodlessness (anæmia), characterised by pallor of the organs and some degree of degradation of their structures. The blood, however, was thin, watery, pale, in some instances scarcely tingeing the fingers of the observer, whilst microscopically it presented those characteristics reported upon by my son, Dr. Williams.

The symptoms during life were—1st., great depression, the animal presenting signs of languor and debility, and indifferent appetite and rumination with

emaciation, the loss of flesh being often extreme, the ears drooping, and the visible mucous membranes, *i.e.*, those of the nose, mouth, eyes, &c., exceeding pale. In one uncomplicated case only did we observe yellowness of these membranes; there was sometimes diarrhœa or purging, but we did not witness one case in which the bowels were constipated, the pulse was exceedingly small and weak in all cases, ranging from 65 to 120 beats per minute; about 85 beats, however, seemed to be a medium, or about twice the natural number; the urine was pale in colour generally, and in all instances, when it was tested, contained a small amount of albumen; the breathing, except in calves, or when the animal was disturbed, was about 20 movements per minute, or about one-third more than the natural number; there was no cough, discharge from the nose, nor other signs of disease of the lungs except in the cases already cited; the eyes had a sunken appearance and the animal had a staggering gait, particularly if hurried or excited. In several instances they fell to the ground when moved sharply or turned round suddenly; in one instance the animal fell down dead, so great was the general prostration and weakness of the heart's action.

The skin about the shoulders, lower portion of the neck and other parts easily rubbed by the animal, was generally denuded of hair and presented a rough scaly, appearance in many instances. This symptom has been desribed as one preceding the advent of the tick, but such is not the case as it was found, upon close examination, that the skin was covered with ticks underneath the undisturbed hair of the host. I therefore conclude that this symptom is a sequence to and not a precursor of the disease as supposed. Some penkeepers call this "mange," and seem to think that it has no connection with the disease. On close examination it was found that there were not only fully matured parasites present but many in an embryonic stage, that is to say, covered by a shell of thin membrane; upon breaking which, two young ticks, namely, a male and a female were usually found in close contact, the male being of a brownish colour and having four pair of longish legs, the female larger, also having four pair of whitish legs and paler in colour than the male,

The surface of the body was generally more or less covered with ticks which presented at least three varieties, viz.: 1st the large blue cow tick, also called the dog tick, *Ixodes Ricinus*, the first tick known on this island, and not supposed to be injurious; 2nd, the silver shield tick, *Ixodes Scapulatus*, which clings much more tenaciously to its host, and is difficult to remove: this tick has four maxillary palpi which, when close together, resemble a spear, but separate from each other at their points when the skin is pierced. These two kinds of ticks, as well as the grass lice, or the young ticks of both kinds, are supposed to be non-injurious to cattle, but I cannot subscribe to this, as they must do harm, and at least assist in the induction of the anæmia or bloodlessness which follows. The third form, the one stated to have been unknown by the majority of penkeepers and others until pointed out to them, was brought before my notice about the third day of our investigation, having been found shortly before upon a lot of cattle badly attacked by the wasting disease. Upon examining this tick I arrived at the conclusion that it was very similar to, or identical with, specimens of the Texan cattle tick, described as follows by Professor C. V. Riley.—*Journal of Medicine and Veterinary Archives*, 1891 and 1892.

Ixodes Bovis.—A reddish coriaceous flattened species, with the body oblong-oval, contracted just behind the middle and with two longitudinal impressions above and three below this contraction. Other observers state that the colour of the adult female is not reddish, that the back is olive-brown, and belly slate coloured. This so far agrees with my own observations that very often, as the parasites become matured, the belly assumes a

slaty tinge. Like the blue ticks, they do not fasten themselves so persistently and closely as the silver shield tick, but are easily removed.

The life history of this tick is somewhat as follows: "Adult females kept confined in bottles lay their eggs. These eggs are placed in covered glass dishes containing a little soil and kept in a warm place. After a period of 3 or 4 weeks, the young ticks appeared; these were placed on a calf kept in an artificially warmed place, the weather being cold. The earliest or larval stage as it emerged from the egg had three pairs of legs. After one week's sojourn on the calf it was ready to moult. The emerging nymphal stage was provided with an additional pair of legs, and after another week's sojourn on the calf the tick was ready to moult a second time and become sexually mature." We thus find that this tick has two periods of moulting while on its host, that it has only three pairs of legs after its first moult, but develops a fourth pair before emerging from its shell a second time, and thus become sexually mature. I may state that I have found the parasite both before and after the second moult, and can confirm the statement that during the larval stage it has only three pairs of legs and four after its second moult. Experiments have proved that each mature female confined in a bottle remains quiet for several days, from 2 to 4½, according to the American observers, but a longer period, from 8 to 12 days, in one case under my notice; then a few eggs will be observed on the mouth and surrounding part. The number of eggs and the period of oviposition vary when kept in a temperature of 60 deg. to 78 deg.; the laying was observed to continue from 8 to 15 days, and that those ticks which took the longest time laid the largest number of eggs. Each full grown female will average 2,100 eggs, which appear as dark red brownish masses of oval bodies.

Such, then, is very briefly the life history of what was described to me as being unknown in this island until lately.

As all the evidence brought before me pointed out that this tick was unknown to the majority of the cattle owners and their servants, I made application to the Colonial Secretary, the Honble. Fred. Evans, to obtain specimens for me through "The Bureau of Animal Industry, Washington, U.S.," of ticks found on Texan cattle, and in compliance with that request, the acting Secretary of that department sent some specimens which were immediately forwarded to me by the Colonial Secretary. These specimens, collected in Manhatta, Ks., correspond in every particular with the Ixodes Bovis, also called Boophilus Bovis, etc., found on the cattle here.

Looking upon the tick, and without confining myself to the "foreigner" alone, as the cause of the disease; which it induces first of all by introducing some virulent secretion into the blood of its host which causes fever, alteration in certain organs in acute cases, the development of bodies which may be living or otherwise into and around the blood-corpuscles, diminish the quantity and deteriorate the quality of the blood and finally induce death by robbing its victim of its life-sustaining fluid—I am of opinion that every effort must be made to destroy the tick upon the ground and upon the bodies of its hosts. The female tick fully or partly charged with ova, leaves her host and deposits the eggs on the surrounding vegetation and upon the ground, which there remain until they are hatched.

During my investigations into a tick disease in Scotland, it was found that old and withered grasses and decaying vegetable matter of all kinds formed a cover for the ticks, and that they preferred to deposit their eggs where there was an abundant cover, and thus secure their non-destruction during the cold of winter. Although protection against low temperature is not necessary in this climate, there is plenty of evidence to show that when decaying and withered vegetation is allowed to remain on the ground there the ticks will be found, and I have been informed, over and over again, that during some parts

of the year cattle will not face guinea grass; that when placed in such pastures they will show signs of excitement, jump over the fences, and thus abandon even the most luxuriant pasture. Now this proves that the ticks are there in abundance, and no wonder, when it is considered that guinea grass, said to be eaten down, leaves a withered stubble often two or three feet long, which forms a cover for the tick to deposit its ova upon, which they hatch, and are ready for the first cattle they may come in contact with.

I therefore think, and I express this thought knowing that it will be perhaps severely criticised, that when cattle are removed from guinea grass, the stubble should be destroyed by burning.

I am told that, when guinea grass is burnt standing upon the ground, the destruction is imperfect and that the heat simply favours the hatching of the young ticks, the ova or eggs being under the stones, &c. If this be the case, the stubble should be cut down collected into heaps and burnt, the ashes remaining being spread over the land and thus return something back into the soil. If it be proved by analysis that the soil is deficient in some essential ingredient, this should now be applied, as fertility of the ground not only insures better crops but renders that ground unfavourable to ticks and other parasites, as proved in Scotland by liming and otherwise improving tick-infested pastures. In addition to the destruction of all guinea grass stubble, decaying and dead vegetations of all description should, when possible, be burnt, and the ashes spread over the land. During my travels here I have witnessed many thousand tons of all kinds of vegetable matter allowed to remain on the ground, harbouring vermin and preventing the growth of useful materials, whereas by collecting such refuse into heaps and buruing, not only would the harbour for vermin be destroyed but the ashes so obtained would to some extent, by improving the land, compensate for the trouble and outlay.

With regard to the destruction of the Ticks themselves.—A united effort must be made to remove the cause of the disease by diminishing, or if possible, wholly destroying, the ticks; and for the purpose of killing them on their host I have after due consideration to the cost, and knowing full well that the profit on an £8 to £10 four year bullock will not allow much expenditure of money; but, if money be not spent and an earnest and a united effort be not made, I cannot speak as to the future consequences.

For the destruction of the ticks on the cattle I recommend as the cheapest and most reliable dressing: one part of tar, to three parts of boiled Linseed Oil, applied to all parts of the tick infested skin; if one dressing be not sufficient, a second should be applied in a few days. All large ticks might be removed by being picked off and carefully destroyed, not thrown upon the ground and stamped upon, but burnt or smothered in tar. Oil destroys the tick by suffocating it and any oil will do this, but boiled Linseed Oil is a cheap oil and being a "drying oil" will remain longer on the surface of the body than a non-drying oil. Jeye's Fluid and Sheep Wash have proved of service in destroying the ticks, but the mixture of Linseed Oil and tar will answer the same purpose and cost less money.

In America and Australia cattle dipping is now resorted to and where the cost can be afforded it should be done in Jamaica, for after all it must be confessed that to see the cattle attendants dress any animal is but a sorry sight. If the dressing is not thorough it is money thrown away, every crevice, fold and depression should be thoroughly dressed, the cavities of the mouth, &c., examined, the ticks removed and the parts dressed; the eyelids should also be carefully examined and the ticks gently pulled off.

Every effort should be made to conserve and protect "tick destroyers" such as the Black Tick Birds, of which I see two kinds, one a long billed and the other a short billed bird. I look upon these birds as the greatest friends

to the cattle owners. I have had much amusement in watching these birds as there seems to be an understanding between them and the cattle, whereby they are assisted and encouraged to destroy the ticks.

The domestic fowl is also very valuable as a tick destroyer, and for this purpose it could economically be kept in increased numbers. The long-legged varieties have a great advantage over the shorter legged ones, as they can reach much higher and thus remove more ticks which usually do not favour, at least to any great extent, the lower parts of the limbs. Tick-destroying birds, such as the Starling and perhaps the Song Thrush, might be imported.

To a stranger visiting the Island, the scarcity of birds is a striking feature. I have been told that this is due to the mongoose, which has not only diminished the number of wild birds, and domestic fowls, but other tick-destroying creatures, such as the ground lizard; now this destruction of the natural tick-destroyers, should, as far as possible, be prevented, 1st by legal protection, 2nd by encouraging the slaughter of the mongoose, a small reward being offered for every head, brought to officers appointed for the purpose of receiving them.

(*To be continued.*)

THE Annual Statistical and General Report of the Army Veterinary Department, for the year ending 31st March, 1896, has come to hand, presenting an amount of information so varied and interesting, as to lead us to infer that our Army, besides being a fighting machine, can lay claim to abilities of a strictly peaceful and clerical nature.

The Director-General, Army Veterinary Department (Col. J. D. Lambert) has been enabled to issue a highly satisfactory Report in regard to the health and the amount of mortality of the Army horses and mules in the United Kingdom during the past year. In a strength of 13,446 troop horses, 147 mules, and 1,844 chargers, the number of deaths from all causes was 20 less than last year, being 296, or 2·22 per cent. The total number of admissions to treatment was 7,995, being 974 less than the previous year, 5,367 being admissions for surgical diseases and injuries. Of these, 14 died and 95 were destroyed, the greater number for fractured limbs.

A decrease of 123 admissions for diseases of the chest and air passages, and a decrease of 79 admissions of cases under the heading General Diseases, were more than counterbalanced by an increase of 208 cases of influenza and epizootic fever.

The average age of horses serving on 31st March last was 8 years and 11 months. The survival of the fittest is claimed for 601 horses of 16 years of age and upwards. The average age of the mules was 14 years and 3 months.

No cases of Glanders or Farcy occurred during the year, a satisfactory state of matters that has existed among our Army horses for over eight years.

The Department has in Egypt the veterinary charge of 666 horses and 140 mules. Excellent health has been maintained among them; and among the former a simple bilious fever, a few cases of Anæmia, also of Spasmodic and Flatulent Colic, formed the bulk of the admissions as cases of systemic disease, in addition to numerous cases of sprains and other injuries. Total mortality was 3·92 per cent.

As regards South Africa, the number of horses and mules belonging to the Imperial Army, and reported on, is 650; the percentage of mortality 8·89. The admissions for wounds, contusions, and sprains were very numerous, and of general diseases, Specific Fever caused the death of 32 out of 34 horses. Of Rheumatism of a severe type there were 16 cases, and of Anæmia 13 cases were admitted. It is noteworthy that Imperial horses and mules, in both Egypt and Natal, were entirely free from zymotic diseases, excepting one case of Strangles, discharged cured, that occurred in Natal.

Included in the report we have information as to the time devoted to veterinary education in the army, and the number receiving that education in the Army Veterinary School.

Officers' Classes.

The constitution of the classes held during the year was as follows:—Cavalry, 32; Royal Artillery, 8; Royal Engineers, 1; Army Service Corps, 9; Infantry, 7; Indian Staff Corps, 5; Indian Medical Staff Corps, 1; Royal Marine Artillery, 1; Canadian Lancers, 1—total, 65.

The following table shows the number of officers attending and the number granted certificates:—

From	To	Number Attending.	Number Examined.	Number of Certificates.
1st May,	1st June.	36	36	24
1st August,	1st September.	29	29	25
		65	65	4

Veterinary Officers' Classes.

One class for veterinary officers was held during the year.

The course of instruction to farriers extended from 1st March to 1st May, and from 1st October to 1st December. The large number of 99 farriers passed their qualifying examination.

The Director-General concludes his report by according great credit to Veterinary-Major Seaward Longhurst and Veterinary-Captain E. R. C. Butler for their abilities as veterinary teachers, and for their excellent management of the Vaccine Institute.

The Army Vaccine Institute merits more than a passing notice, and we therefore append verbatim the report supplied in relation to a work of so much value and importance that is entrusted to our Army Veterinary Department, and which is carried out so successfully.

Army Vaccine Institute.

The number of persons for which lymph was cultivated during the year was 44,295, and, with the balance remaining from last year, amounts to 45,295; of this, lymph for the vaccination of 43,459 persons was issued, leaving a balance on hand of 1,836.

Of the 43,259 issues of lymph made, results have been received for 38,251 vaccinations, which are shown in the following table:—

Stations.	Primary Vaccinations.			Re-Vaccinations.			Totals.
	Perfect.	Mdfied.	Failed.	Perfect.	Mdfied.	Failed.	
Home	3,542	63	90	21,392	8,082	3,667	36,836
Foreign	326	49	177	174	140	549	1,415
Totals	3,868	112	267	21,566	8,222	4,216	38,251

Home Stations.

Primary vaccinations, percentage of success 97·57
Re-vaccinations „ „ 88·94

Foreign Stations.

Primary vaccinations, percentage of success 67·94
Re-vaccinations „ „ 36·39

The results obtained at home stations are excellent.

The number of calves vaccinated during the year was 16, giving an average of 2,830 persons to each calf.

The greatest amount of lymph obtained from one calf was sufficient for 3,906 persons, and the smallest amount obtained was for 1,021 persons.

The average daily issue of lymph was for 118 persons.

During the year 1,837 boxes, 3,567 tablets, and two tubes were issued.

The total amount of expenses for the year, including cost of calves, instruments, etc., was only £75 7s. o½d.

Since the opening of the Institute on the 21st January, 1889, to the 31st March, 1896, lymph has been prepared for 290,596 persons.

In November, great pressure was experienced owing to urgent requisitions being received for lymph to vaccinate the whole of the troops proceeding to Ashanti, including lymph for 450 sent to Gibraltar to vaccinate the West Yorkshire Regiment, and lymph for 500 sent to Sierra Leone to vaccinate the 2nd West India Regiment. In addition, lymph for 2,000 persons was sent with the expedition to Cape Coast Castle. The total amount sent out during the month was sufficient for 7,003 persons. The requisitions were complied with by return of post without any difficulty.

To General the Right Hon. Sir R. H. Buller, V.C., G.C.B., K.C.M.G., Adjutant-General to the Forces.

In bringing this brief synopsis of the successful results achieved by our *confrères* in the Home Army, under the guidance of Veterinary-Colonel Lambert, to a conclusion, we are irresistibly led to compare the past with the present in regard to the efficiency of our Cavalry and Horse Artillery Forces. Army records testify that until veterinary surgeons were entrusted with the medical care of army horses, the mortality among them was very great. As proved by the statistics of a date not much anterior to the Crimean War, the annual mortality was computed then at as many thousands, as it is now hundreds.

Our profession, therefore, has good reason to be proud of the benefit that the nation has derived from its services in the army. Would that they had been more made use of by that civilian Department of our Government of the present day which assumes the *veterinary* management of the flocks and herds that constitute so large a proportion of the wealth of the country. We, in all probability, would then have been spared the painful perusal of returns from year to year which carry with them their own condemnation in the disastrous losses from swine fever, therein reported. A civil Veterinary Department formed on the lines of that of the Army, we have no doubt would have yielded equally splendid results.

THE VETERINARY PROFESSION IN AMERICA.

THE contents of the October number of the *American Veterinary Review* furnish most gratifying information in regard to the prominent position that is being taken up by its members on that great continent as scientific authorities on the diseases that affect man and the lower animals in common, or that affect the national wealth in the devastation of herds and flocks.

During the first week of September, Buffalo University, Buffalo, N.Y., was the meeting place of a large proportion of the leaders of the veterinary profession in America. Among them were many who have done great work and whose names are well known in this country. Twelve veterinary schools also were represented, while from the far distant points, Nova Scotia to Louisiana, from Manitoba to Alabama, from Montana to Tennessee, and from Nebraska to Maryland, veterinarians were assembled. The occasion was the thirty-third meeting of the United States Veterinary Medical Association, whose work occupied three days, followed by the seventh annual meeting of the New York State Veterinary Medical Society, and a meeting of the Association of Veterinary Faculties of North America.

The Association of the United States entered into a long programme of business, preceded by an eloquent address from Dr. Hoskins, the President. Reports were received from the Committee on Army Legislation, the Committee on Publication, the Committee on Intelligence and Education, and the Committee on Diseases. The matters set for discussion were firstly, The Master Horse-Shoers' Association, relative to veterinary Instruction in Schools of Farriery, which led to an animated debate and the following resolution:—

> That this Association approves the action of the Master Horse-Shoers' Association in reference to the instruction of its members and their subordinates on such subjects as tend to perfect the art of horse-shoeing and thus avoid the great and frequent losses that result from the imperfect shoeing of the horse's hoof, and this Association pledges its support to all properly-directed measures designed to accomplish this object, and it is the sentiment of this Association that horse-shoers should be instructed in such subjects as pertain to the normal form and function of the foot, and the mechanical processes necessary to preserve such conditions.

The subject of tuberculosis evoked a lengthened and scientific debate, contributed to by veterinary scientists of world-wide fame, viz., Dr. D. E. Salmon, of the Bureau of Animal Industry;

Professor C. P. Lyman, of Harwood; Dr. M. R. Trumbower, State Veterinarian of Illinois; Professor Leonard Pearson; Dr. Clement, State Veterinarian of Maryland, etc. The following resolution being unanimously adopted:—

> That the live stock and especially the breeding interests of this country can never regain their former prosperity until such measures have been carried out by the National and State Governments as will afford some reasonable guarantee against the continued ravages of this disease. And in view of the prevalence of bovine tuberculosis in foreign countries and the measures taken by some of them to protect their cattle from further infection the United States should prohibit the importation of breeding animals until they have been proven by the tuberculin test to be free from this disease.

Other papers embracing a variety of subjects were read and discussed, viz., Diphtheria in Cattle, by Dr. J. F. Winchester, of Lawrence, Mass.; Tuberculosis in Birds, by Dr. Salmon; Serum Therapy in Hog-Cholera, by Dr. Peters, Lincoln, Neb.; Cathartics, by Dr. M. H. Reynolds, of Minnesota, and Some Southern Experiences, by Dr. W. H. Dalrymple, New Orleans, La.; Physiological Variations, by Professor W. L. Williams, Cornell University; Diabetes Mellitis in Dogs, by Frank H. Miller, Berlin, etc.

The Society of the New York State also transacted a large amount of business during a two-days' sitting. The Chairman of the Committee on Legislation reported on a list of six Bills, introduced in the Legislature during the past session. The Committee received a vote of thanks for their effective and excellent work. Reports from the secretaries of several committees were next called up, which all showed that an active part had been taken in protecting innocent consumers of flesh and dairy products against unwholesome and infectious food products. Of several professional papers announced to be read and discussed, only two, viz., Bacteria in Milk, and Veterinarians as Sanitarians, were brought forward.

The members of the Association of the American Veterinary Faculties appear to have assembled with almost fruitless results as regards business, which latter was intended to be of a nature directly affecting the interests of teachers and students. The first subject, Uniform Course of Instruction, was held over. The second subject, Mutual Rccognition of Students by Colleges belonging to the Association of Veterinary Faculties, was descanted upon by Dr. H. D. Gill, and discussed by Drs. Law, Pearson, Stalker, Salmon, McEachran, Hughes, Lyman, and Wright. The subjects of Competitive Examinations for Positions in the Veterinary Faculties, and School

Fees, were relegated to the table without remark or discussion, which (with the exception of some official business) ended the Great Buffalo Veterinary Conventions.

THE half-yearly general meeting of the Glasgow and Suburbs Master Horse-Shoers' Association, was held in the Religious Institution Rooms, Glasgow, on Friday, October 2nd, at 8 o'clock p.m.

Mr. Allan P. Blue, M.R.C.V.S., occupied the chair.

After the ordinary business had been disposed of, Mr. James Weir, F.R.C.V.S., read to the meeting an interesting paper on "Some diseases of the foot due to our system of shoeing." Mr. Weir dealt in detail with the various troubles which the shoeing-smith would come upon in his daily avocations, and indicated the methods of treatment, which, in his opinion, were best suited to each case.

The lecture was listened to with much appreciation, and a lively discussion thereon followed. On the motion of Mr. James Jardine, a hearty vote of thanks was accorded to lecturer.

Cases.

TETANUS TREATED BY "TETANUS ANTITOXIN."

BY VETERINARY-LIEUTENANT NEWSOM.

IN this case the patient was a valuable hunter, belonging to an officer of the Inniskilling Dragoons. She had been at grass during the summer, and had been taken up about one month previous to date of seizure, during which interval she had received a dose of physic.

On Saturday evening, October 3rd, she was noticed to have a difficulty in eating hay, but drank freely and ate a bran mash. Next day this peculiarity was more marked, and on Monday morning the case was brought to me.

The temperature was then 102·5°, and all the symptoms of tetanus were present to a marked degree, these being probably aggravated by the walk from the stables to barracks (about 1½ miles). The usual instructions were given to the owner as to nursing, and chloral hydrate, combined with a saline, were prescribed.

On visiting the patient in the afternoon, a diminution in the severity of general symptoms was evident; the breathing being quiet and more regular, and the temperature lower,

but the condition of the head and neck was the same; the general improvement being only the result of the improved surroundings.

The animal could eat nothing, though, as is usual in these cases, she evinced an inclination to do so, and drinking was only accomplished with an effort. Oatmeal gruel and linseed tea were ordered, and a continuance of chloral hydrate. During the next two days no change was recorded, the temperature during the period varying from 101·4° to 102·8°. Hyd. subchlor., 1 dram, was given each evening, and the chloral hydrate continued.

On Thursday, the 8th inst., the condition of the patient was less satisfactory, the temperature being 103°, and a return of general symptoms evident. Nourishment (milk and eggs) was given from a bottle periodically, as the patient could neither eat nor drink satisfactorily. I decided to try "Tetanin," and made arrangements for obtaining it from the Edinburgh Infirmary Dispensary. This arrived on Friday morning. The amount used was 1 gramme (15½ grains) dissolved in 10 c.c. of sterilized distilled water, and given in two doses at two hours' interval. The temperature at the time of the first injection was 103·5°, and the general symptoms were well marked—jaws fixed, head protruding and resting on manger, nostrils dilated, and breathing hurried and irregular; tail carried to one side and twitching in the usual manner, and difficulty evinced in moving the animal.

Two hours afterwards a great change for the better was noticed. The patient was quieter, and the spasms less severe, and the temperature down to 101·4°. The remainder of the solution was then given.

By evening there was a still further improvement in the condition, and this continued to be the case till Monday morning, the 12th inst., when the patient was convalescent. By the 14th the animal was looking bright and well, and eating without much difficulty, though a little stiffness of the jaws still remained. The molars on both sides were found, on examination, to be irregular and very sharp, and I am inclined to think inoculation must have taken place through a wound inflicted by them.

Throughout the attack the mouth was kept as clean as possible by washing it out with a solution of potas. per manganas.

Remarks.

From the very marked improvement which followed the use of the "Tetanin," I am inclined to attribute recovery in

this case to its use. The satisfactory results, at any rate, point to its being worth giving a further trial, where possible. I say "where possible," for the present cost of the drug places it outside the reach of the average general practice of Veterinary Medicine. A small tube containing 4½ grammes, or about 1 drachm, costs £2 12s. 6d.

In preparing it for use, the greatest care is necessary to have everything thoroughly sterilized—scales, pestle and mortar, bottles, water, and the hypodermic syringe.

FRACTURE OF LEFT PARIETAL BONE.

BY VETERINARY-LIEUTENANT NEWSOM.

THE patient in this case was a re-mount of the Inniskilling Dragoons. At evening stables on the evening of Friday, the 9th of October, he was being groomed with his head round in the stall. As he occupied the end stall, his head just came under one of the ventilators over the door, which was open and had the bolt shot and turned back, thus forming an immovable projection below the lower edge of the ventilator. The man grooming the animal, by shouting at the next horse, frightened his own, and caused him to throw up his head, which, by ill-luck, struck the bolt.

The case was seen by one of the Farriers, but as the animal seemed none the worse for the accident, the small skin wound was treated in the usual way. No change took place in the condition of the patient till Sunday morning, when my special attention was called to him, as instead of being bright and well as usual, he had suddenly become dull and listless, refusing food, and taking little or no notice of his surroundings.

I found the temperature 105°, the pulse hurried and irregular, and the patient hanging his head with his eyelids closed. The discharge from the small skin wound, situated about the middle of the left parietal bone, was of a very unhealthy character, and the greatest pain was evinced on manipulation, however gentle, round the seat of injury. From the previous history, and the then condition of the patient, it was evident that injury had been done to the bone, and that the brain had received a shock. The patient was removed to a quiet box, and the wound irrigated with a solution of hyd. perchlor. (1-1000). Cold water was applied to the head, and full doses of salines, with tr. aconite, ordered.

On the 11th the patient was still very dull and heavy, but the temperature had fallen to 103°, and though generally disinclined to notice surrounding objects, he ate a little bran mash and steamed hay, and drank well.

No perceptible change took place till about mid-day on the 13th instant, when the temperature rose to 103·8°. The dulness and loss of consciousness of surroundings became more marked, and vision seemed for the first time impaired, the pupilary openings being irregular, and when the patient moved, which only happened very rarely, he would walk into the box wall. The eyelids were partially closed, and the lips pendulous, and the head held drooping. A full dose of aloes was given in solution, and the other treatment continued as before. During the night the patient became delirious, walking persistently from left to right round the box, and turning only when his nose struck each wall of the box as he reached it. Bromide of potassium in 2-dram doses were ordered, only to be repeated if necessary. Towards morning the delirium became less marked, but the dulness and apathy remained, and this condition continued till the evening of the 15th, when delirinm again set in, but of a more severe type, pointing more directly to meningitis than had the previous symptoms. As the condition of the pulse allowed it, I bled the animal freely, and an abatement of the symptoms resulted, though the relief was only temporary, and by next morning the patient was as bad as ever, and the case evidently hopeless. The delirium became worse each moment, and convulsions set in, these also being progressive in their severity. The utmost care was taken to prevent the patient doing itself serious injury, but this became an impossibility, and as the attendants were also in considerable danger of being hurt, if not killed, the animal was destroyed by "pithing."

Autopsy.—Post-mortem examination revealed much inflammation of the tissues in the neighbourhood of the wound. A depressed fracture (about three-quarters of an inch in diameter externally, and 1½ inches of the internal plate), with starring of the bone in several directions. Acute general meningitis and inflammation of the brain substance of the left hemisphere, and the formation of an abscess, about the size of half-a-walnut, just under the fracture.

Remarks.

This case affords a good example of the amount of shock the horse can stand, and of the difficulty of forming an

opinion as to the extent of injuries of this nature. Quite thirty-six hours elapsed before symptoms were evinced which would lead to the supposition that the injury was anything more than a skin wound.

The *post-mortem* proved that, even had fracture been diagnosed, surgical interference would not have been attended with benefit. Had such an idea been thought of, the time at which it should have been attempted was on the Sunday morning, when serious symptoms were first observed.

Details of nursing and treatment have been omitted in the above extract from notes.

Throughout the patient was kept as quiet as possible; the wound was dressed with antiseptics, and cold applications were continuously applied to the head.

FISTULA OF THE ŒSOPHAGUS.

BY W. L. COCKBURN, M.R.C.V.S., ASSISTANT TO R. COCKBURN, ESQ., M.R.C.V.S., EASTWOOD, NOTTS.

THE subject was a bay cart gelding, eight years old, brought to this yard on September 12th, presenting the appearances of having had a slight chill. He had been at work the day before, and been turned out to grass during the night, which was an exceedingly cold and wet one. He was treated, and apparently got all right; anyhow, we heard no more of him until the 24th September, when we were called to see him rather suddenly, and on arriving found that an incision had been made just behind the angle of the inferior maxilla in the jugular furrow, from which saliva was flowing. On passing the finger into the wound, a mass of bran and other ingesta were found. Fluids, if swallowed, were expelled with considerable force from the opening; a large part of the solids were returned through the nostrils. The owner, questioned about the presence of the incision, said that the animal's throat had commenced to swell two days previously. A quack, whose opinion had been sought, expecting, I suppose, the swelling to be an abscess, put his knife into it, and expressed himself "rather puzzled about the queer-looking matter" which exuded. We had the horse destroyed, and on *post mortem* found a fistulous opening in the œsophagus, just behind the pharynx, on the superior surface. The swelling seen during life was found to be due to the ingesta having been forced through the fistulous opening, making a way for itself on each side, more than filling up the jugular furrow for

eight or nine inches down the neck. The tissues here presented a gangrenous appearance, and emitted an exceedingly foul odour. Two clean-cut incisions were found (one on each side) in the œsophagus, opposite the external wound, the knife having been passed right through the lumen of the gullet, piercing the opposite side, rather a formidable operation, on account of the large blood-vessels situated in this particular part.

We are unable to offer any explanation or cause of the fistula, the animal having had no apparent difficulty in swallowing until the 22nd, on which day both the tumefaction and asphagia seemed to appear quite suddenly.

PUNCTURED WOUND.

BY A. P. BEESLEY.

WHILST seeing practice in Lancaster last spring I was called upon to see a black mare, the property of a farmer, which had been run into by a conveyance the day before.

On examining the mare, I found a wound the size of a two-shilling piece on the near side, about the upper third of the 8th rib.

On passing a probe I found the wound extending five or six inches over the 8th, 9th, and 10th ribs, and feeling something hard, I diagnosed fractured ribs. I then passed in a pair of forceps, to remove any portions of broken bone, and, to the surprise of my client and myself, I withdrew a piece of iron, about two or three inches in length, which I afterwards learnt had come off the conveyance with which it had collided.

Treatment.—Gave a dose of physic, syringed out the wound with a solution of perchloride of mercury (1-1000), then inserted a pledget of tow, saturated with the solution, into the mouth of the wound, to stop the entrance of germs; ordered fomentations to be applied.

On visiting next day found the patient much the same; pulse, temperature and respirations normal; feeding a little. Ordered same treatment as before.

Next day I received telegram to say the mare was much worse. On arriving there, found her dead.

On making a *post-mortem*, I found the internal organs in a congested state, septic pneumonia in the lungs, the blood dark and tarry, and in a fluid condition, and giving every symptom that the mare had died from "Septicæmia."

Editorial.

A RESURRECTION.

ONCE more I appear before the editorial curtain and make my bow to the readers of the VETERINARY JOURNAL; once more I return to my native country and breathe its invigorating air. I feel, however, as if I owed an apology to my countrymen—or, at least, to some of them—for my audacity in so doing. According to some authorities, I am at the present moment a disembodied spirit, a wandering ghost, shivering by the banks of the Styx and waiting to be ferried across by old Charon to the Elysian fields. Had I lingered a few weeks more in the West Indies, it is probable that these worthy people (journalists and others) would have chanted a dirge or piped a coronach over my—supposed—mortal remains. I might have had the pleasure of reading my own obituary notices; I should have had an opportunity of learning what my friends think of me, and should have had the grim satisfaction of drawing forth all the venom and sarcasm of my enemies. The alarm and consternation of the latter on seeing the victim of their malevolence appear before them in the flesh, to demand an explanation and possibly threaten an action for defamation of character, would have been truly ludicrous, and would have gone far to console me for my imaginary death. It must be a great disappointment to certain paragraphists, who had begun with fever and ague and were preparing to announce my demise, to find that a nice sensational article had been utterly spoiled by my turning up hale and hearty; to these gentlemen I tender my most sincere apologies for being still in the land of the living; I regret the frustration of their labours, but I must beg them to believe that I am really myself, and I must request them to keep their black-bordered articles for a little time longer, as I intend to live as long as I can, and, if possible, to outlive my enemies—even the toughest of them. The world little knows how tough an editor is, how difficult to kill, though so constantly menaced. It is always best not to prophesy till you are sure; it is always safest to keep your sensational paragraphs till you see your victim safe in his coffin. It is not given to many men to die—according to report—twice in one year, and yet to feel themselves in the best of health; yet such is my extraordinary experience. I shall think better of myself in future, I shall begin to fancy myself one of the immortals.

For those who circulated reports of my serious illness and approaching death, merely from thoughtlessness and folly, I feel contempt and a little pity; for those who spread such reports from base, mercenary motives, I feel the utmost disgust; for those who persisted in their malicious and mendacious statements in spite of my own personal assurance and my own bodily appearance I feel nothing but indignation; if they wish to be cosidered men of honour, or men at all, they will apologise for their misconduct and withdraw their falsehoods, or worse may befall them. Surely it is sufficient for me to assure my readers that I enjoyed the best of health during my voyage outward and inward, and during my whole stay in the West Indies; surely it is enough to say that I had a better appetite and that I slept better on board ship and in Jamaica, than I generally do at home; that I travelled over the whole island, driving sometimes 50 miles in one day, and this in spite of the fact that the months were August and September; that I sustained the boundless hospitality of the islanders, from the humblest to the most influential; that I am now in the best of health, thanks to Providence and to the solicitude of my friends. I say surely this is all that is necessary in order to convince my friends that the Editor of the VETERINARY JOURNAL is well and hearty and has returned to England with an increased and intensified appetite for work.

A report of my doings in the West Indies will be found on another page of the Journal and I trust it will interest all my readers. I shall probably return to this subject next month or very soon thereafter; in the meantime I thank my friends for their indulgence during my absence abroad, and I assure them that although the blue skies and the orange-groves of the West are excellent things in their way, and I owe much gratitude to my hospitable entertainers in Jamaica, still I prefer the old country because it is home, and the old people because they are my friends.

THE MINISTER OF AGRICULTURE, now in possession of the confidence begot by experience, is showing himself to be the right man in the right place. His able and eloquent speech to the agriculturists of Scotland, reported in another part of the JOURNAL, will repay perusal. It is marked with a liberality of purpose and a wide and deep knowledge of every phase of the agricultural interests, and we are encouraged in the hope that our profession, whose interests are so much intertwined with agriculture, will further benefit from

the administration of a gentleman who already has done some good to us and to the country at large.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

OPENING OF THE NEW VETERINARY COLLEGE, EDINBURGH.

THE Session was opened on Wednesday, October 7th. General Chapman, C.B., Commanding the Forces in Scotland, presided at the opening, in the presence of a very large number of the veterinary profession and others interested in the institution. Among those present were :—General Cockburn, Duddingston; Colonel Ross, Commanding Royal Scots Regiment; Captain Gilmore; J. A. Ker, Esq.; Professor McCall, Jr., Glasgow; Messrs. W. Woods, F.R.C.V.S., Wigan; R. J. Hickes, F.R.C.V.S., Market Weighton; Finlay Dun, F.R.C.V.S., Edinburgh; R. Rutherford, F.R.C.V.S., Edinburgh; A. Boyd, F.R.C.V.S., Melrose; A. Spreull, F.R.C.V.S., Dundee; J. Hutton, F.R.C.V.S., Kelso; P. Moir, M.R.C.V.S., Edinburgh; J. Borthwick, M.R.C.V.S., Kirkliston; Jas. Borthwick, M.R.C.V.S., Kirkliston; W. D. Connochie, M.R.C.V.S., Selkirk; W. D. Connochie, Jr., Selkirk; J. Connochie, M.R.C.V.S., Ayton; J. Storie, M.R.C.V.S., East Linton; A. W. Lawson, M.R.C.V.S., Falkirk; G. Elphick, M.R.C.V.S., Newcastle; W. Bannatyne, M.R.C.V.S., Haddington; J. Aitken, M.R.C.V.S., Dalkeith; J. Aitken, M.R.C.V.S., Edinburgh; R. Scott, M.R.C.V.S., Hawick; J. Thomson, M.R.C.V.S., Aberdeen; W. Dotchin, M.R.C.V.S., Newcastle; A. Munro, M.R.C.V.S., Altrincham; F. R. Brown, M.R.C.V.S., West Calder; Lieut. Newsom, A.V.D.; Lieut. Wilkinson, A.V.D.; A. Hume, M.R.C.V.S., Haddington; B. W. Donaldson, M.R.C.V.S., Bridge of Allan; Bailie Sloan, Councillor Hay, and Councillor Hunter, of the Edinburgh Town Council, and numerous ladies.

General CHAPMAN, in announcing the commencement of another session, expressed the pleasure he felt by being honoured to give that notice, and then introduced Dr. Stevenson Macadam to the audience.

Dr. MACADAM'S opening address was as follows :—

I have great pleasure in once again finding myself behind the lecture table of the New Veterinary College. It brings back memories of the infancy of the College—of the days gone past—when I was on the staff in active work. Since then I have never ceased to take much interest in its success and advancement of the College, and when it has now attained robust manhood in its career, I can congratulate all—Principal, Professors and Students—on the high position which the College has acquired and maintains as one of the foremost Professional Institutions in the kingdom.

My first duty to-day is to bid all the students before me a hearty welcome within these walls.

To the first year's students who are now entering upon their professional career, and who have not yet become acquainted with the solid work of the College, I can confidently offer a sympathetic and affectionate greeting. From personal knowledge of the equipments of the College, and the eminence, energy, and zeal of the professors and assistants, I can assure the first year's students that there will be no lack of teaching power and teaching requirements.

To the students of the second or more years, who have learned in previous sessions what the College can do in imparting sound knowledge in the lecture room, laboratories, infirmary and forge, I can offer an equally warm return welcome from the heart, for old and known faces are always to be esteemed for the associations of by-gone times which they bring with them.

The profession of veterinary medicine and surgery has enormously advanced since my first official connection with a veterinary college, now more than forty years ago. More subjects require to be grappled with; more lectures must be attended; more practical work requires to be carried out, and more strict and searching examinations must be passed, before the student can obtain the position of the practitioner. All these additional requirements necessitate greater application and more studious habits, and even more pluck, go, and energy on the part of the student. But the reward for success is all the greater, and the position of the veterinary practitioner of the day is all the higher for the more comprehensive study, and the more thorough examinations.

For the successful carrying through of your studies and examinations, I can offer you no royal road. I can only advise you that the best guarantee for success in your profession—whether as student or practitioner—lies in your doing honest, earnest, thorough daily work; never shirking your duty in classrooms or elsewhere; always keeping up with the day's work, and never leaving till the morrow what ought and can be done in the passing day.

Some men may be naturally brighter than others—be more quick at the up-take, as we say—and if men have this extra natural talent, all the more should they exercise it. They should not lean upon it and fancy that it will serve them in place of regular work when they enter the examination hall, or when they go out into the world to discharge their professional duties. I speak with great experience as a professor—alike in the Veterinary College and at Surgeons' Hall, when I say, that it is often a misfortune for a youth to be esteemed as more clever than his fellows, and especially when he is told so, or held up to be so, by his immediate relatives, and even more so when he himself begins to think that he is a genius. The youth is apt to get lax in his daily work. To forget to do the things he ought to do—not to speak of the things he does and ought not to do—with the result that he lags behind in his studies, in the expectation that he will be able by a spurt at the end—by fits and starts, possibly cram—to acquire the necessary knowledge to pass the examinations. A most unwise procedure, a most dangerous course, and one which, at the very best, can never equal steady work from day to day. To the honest, earnest, plodding student, the examination day should be no terror, but should be welcomed as the pass-day from one stage to another in his professional career.

Whilst all should aspire to study daily for the successful pass in the examinations, we should likewise remember that when the examinations are completely over, and the student has become the practitioner, then the knowledge which he has imbibed in student days requires to be applied, often single-handed, in future practice. It will be then that the veterinary surgeon will find that the more thorough his work as a student the more fit he is for the responsible duties of a practitioner. And, depend upon it, the public—your ultimate patrons—will not be blind to any evidence of want of adequate knowledge or deficiency in medical and surgical skill which the practitioner may display, and neither will they fail to observe—though it may be with a critical eye—that ability, thorough training, and successful treatment which are sure to follow your efforts after well-spent student days. And, further, you may rest assured that the public will not only recognise and appreciate full and proper knowledge and skill on your part, but they will not be slow to reward such by a well-earned fee, and at the same time to uphold and spread the fame of your good name.

Nowadays, professional men of any standing in every profession, must even go beyond the immediate topics of their special studies for the exercise of their profession. To take a good place, a foremost position, the college-bred man is expected to keep abreast of the discoveries in science from time

to time, and though he is not required to have an intimate knowledge of all the details, yet a general acquaintance or inkling with the subject is looked for. It is therefore right and proper that all professional students should read up the scientific journals of the day where abstracts of new facts and theories are given. You cannot begin too soon to learn the habit of reading and digesting these short notices which thus appear in the journals, and which are generally ahead of the ordinary text-books. Such reading need not monopolise the time required for your special studies more immediately bearing upon our profession, but will be a recreation from such of the most healthy kind. True recreation is not to sit idly by and do nothing. Physical exercise for the body must never be forgotten for such conduces to the maintenance of healthy functions, and a robust, healthy frame is a great blessing. But the recreation of the mind will be found best in a change of subject of study. Personally, as a struggling young man, and with pure and applied chemistry as my professional aim and work, I sought recreation for the mind in the study of other sciences, especially in botany, zoology, and above all in geology, and the time spent in acquiring the knowledge of these extra sciences was really time gained in my more immediate studies, and has besides been a life-long comfort and enjoyment to me wherever I have wandered in holiday seasons.

As you pass from the portals of this College and the examination hall, you ought still to keep up your studies. As college-bred men, the public expect you to have and to give general information regarding the discoveries of the day in science. At no time in my life nor even in living history has public interest in scientific discovery been more pronounced than in the present day, and the outside people are anxious and strive to be fed with the crumbs which fall from the scientist's table.

You, when each session's work is over and still more so when your college work is ended, will be expected by your fellow-men to solve inquiries which they will make to you regarding the more pronounced discoveries of the time, and you ought to be prepared to give some information thereon however general and slight though it be. Much will depend upon the extent of your readily meeting those inquiries, how far the public will gauge the up-to-date character of your college education.

Let me indicate to you some of the points on which the public at present eagerly desire some explanations and on which you may throw more or less light.

(1.) The new chemical element Argon found in the atmosphere and elsewhere.
(2.) The new chemical element Helium found in certain minerals and in the sun.
(3.) The liquefaction and even solidification of gases, including the atmospheric air, and
(4.) The Röntgen or X Rays.

The discovery of the new element argon was first announced by Lord Rayleigh and Professor Wm. Ramsay, at the meeting of the Royal Society of London, on 31st January, 1895. They had been experimenting upon atmospheric nitrogen, and found that it appeared to be slightly greater in weight than the nitrogen obtained from other and more strictly chemical sources. It was apparent therefore that either the atmospheric nitrogen contained something heavier than nitrogen, or the chemical nitrogen contained something lighter than nitrogen.

Curiously enough an experiment had been made by Cavendish in 1785, and duly recorded on the atmospheric nitrogen on somewhat similar lines. Cavendish found that after withdrawing the oxygen and nitrogen from atmospheric air as far as he was able, that there remained a small residue of

gas which was neither, and that such was in quantity about 1-120th of the bulk of the whole. This hint, however, was forgotten by chemists and lay dormant.

Rayleigh and Ramsay's experiments clearly proved that when they had removed the oxygen and nitrogen from the atmospheric air by the most accurate methods, that a residue of 1 per cent. in bulk of the nitrogen was left behind, and that such differed materially from the nitrogen itself and indeed was a new gas and element which they named argon. This new substance is heavier than nitrogen in the proportion of practically 20 for argon, and 14 for nitrogen, and in its chemical characters is much more negative than nitrogen itself. Indeed so negative is the new element that it has as yet baffled all attempts to combine it with the other elements; and in this respect differs materially from even nitrogen which does readily combine with the elements, and forms compounds of great energy, such as nitric acid, ammonia, and the alkaloids. The difference between argon and nitrogen may also be observed in spectrum analysis where the argon exhibits special coloured lines—red, yellow, green, blue, and violet—which mark it out as distinct from nitrogen. It is also much more soluble in water (2½ times). It is difficult to speculate upon the uses of this new element in the atmosphere or elsewhere, and further experimental details will be anxiously waited for.

Professor Ramsay, in prosecuting researches for other sources of argon than the atmosphere, employed the mineral cléveite which was known to give off nitrogen gas when treated with dilute sulphuric acid. He found that this so-called nitrogen contained much argon gas, and along with this another new gas, much lighter in weight, but possessing similar negative properties. This newer gas yielded in spectrum analysis other lines than those of argon and nitrogen, and especially a very bright yellow line, which corresponded exactly with a bright yellow line observed in the spectrum of the sun, and which had previously been mapped in the sun's spectrum and called helium, and which had not previously been known to be a terrestial element. Professor Ramsay has also found the new element in meteoric iron, and Lord Rayleigh has found both argon and helium in the gases obtained from Bath springs.

Lord Rayleigh and Professor Ramsay have thus discovered two new elementary snbstances which form part of the earth, though the proportions in which they are found are very small.

The researches in the liquefaction of gases were really begun by Faraday, in 1823 and onwards; but it remained till 1878, when Cailletet and Pictet, by greatly improved and extended apparatus, succeeded in liquefying all of the gases supposed till then to be permanent. The principles involved in the experimental trials consisted in subjecting each gas to intense cold and very powerful pressure.

The most successful work in the liquefaction and even solidification of the gases, including atmospheric air, of late years, has been carried out by Prof. Dewar, of the Royal Institution, London, who has employed the most complete apparatus, constructed in the most skilful manner. The same principles of intense cold and great pressure are employed, and the operation is so much under control that, within a quarter of an hour of the starting of the apparatus, liquid gases, including liquid atmospheric air, may be obtained as a thin stream issuing from a minute orifice, and be run into vessels for retention. The temperature of liquid air is—180° to 190°C., or twice as far below the freezing point of water as the boiling point + 100°C. is above the freezing point. The liquid air is clear and transparent, like ordinary water, and evaporates slowly, yielding a heavy vapour which, allowed to fall over soap bubbles, instantly freezes them. When alcohol and turpentine are immersed in the liquid air, they become glass-like, whilst some other volatile liquids crystallize

like ordinary ice. When the liquid air is still further reduced in temperature to —210°C. a transparent jelly is formed, which appears to consist of frozen nitrogen containing the oxygen in a liquid or less jellied condition.

The new element argon, taken separately, has also been liquefied at the low temperature of 128°·6C and great pressure of 36 atmospheres, when it passes into a columnless liquid, and when such is immersed in liquid oxygen, the argon becomes solidified.

During the present year the scientific world has been startled by the announcement of the discovery of the X rays by Professor Röntgen, and probably no modern discovery in the domain of science has so largely captivated the public mind, or become so quickly serviceable in the cause of humanity. These X rays are evolved from the extreme dark or ultra violet end of the spectrum of light, but it is very questionable if they emanate from rays of light at all, though they undoubtedly are propagated from the dark end of the light spectrum. They are most readily produced when electrical discharges from a Ruhmkorff Coal Machine are passed through a Hittorf or Crookes' vacuum tube or bulb, and the latter may be enclosed in a black cardboard case, or even a thin metal case, through which sunlight or even the electric light cannot penetrate. These invisible X rays are not visible under ordinary circumstances to the naked eye, however near the eye may be brought to the apparatus, or however long and steadily you look at the various parts. When, however, a screen of glass rendered fluorescent by a coating of various salts, such as barium platino cyanide, or corresponding calcium salts, or phosphorescent zinc sulphide, or uranium glass, is brought near the vacuum tube or bulb in which the X rays are being developed, the whole surface of the glass plate becomes illuminated by the impingement of the dark X rays.

These rays have such penetrative power that they have been passed through a book of 1,000 pages, binding and all, and also through one inch of pine wood and one inch of hard rubber. They readily penetrate into and through boxes made of the metal aluminium, and even pass through thin sheets of other metals, such as lead and tin. If the hand be placed before the rays, they readily penetrate through the flesh and blood as if these were ordinary glass, but they are blocked by the bony tissue. If the hand be laid on the top of a box, and the electrolysed bulb developing the X rays be placed or held above the hand, the rays pass through the flesh and blood, and the wood of the box, though they are arrested by the bones, and as these rays possess photographic powers, it follows that if a sensitised photographic plate be enclosed in the box, an image of the hand will be obtained on the plate, which can be developed in the ordinary way as a negative plate, and prints be afterwards prepared, where the flesh and blood will be seen to be transparent, and the numerous bones be clearly observed to be dark. The box in which the photographic plate is enclosed may be made of the metal aluminum, as the X rays readily penetrate this metal.

At first the process of obtaining a good photographic effect was rather tedious, occupying some 30 to 60 minutes, but necessarily experiments were made which shortened the time and even produced better effects. Thus an ordinary photographic printing frame may be taken, enclosing a sensitised plate, and a sheet of black ebonite being placed in front of the plate, the hand is laid thereon, and the whole firmly secured in place by straps or bands. The X rays are then passed through the hand and ebonite, and act chemically on the sensitised plate, producing an impression which can afterwards be developed as a negative, and from which positive proofs can be obtained in the same way that ordinary photographs and prints can be produced and finished. By this improved method of working, the exposure to the plate in the frame need not occupy more than a minute in producing the desired

impression. These photographic plates and prints afford a permanent record of the structure of the bony tissue, and any abnormal state of the bones, as malformations, fracture, or otherwise, can be clearly observable.

A still further improvement in the application of the X rays has been carried out, where observations may be instantly made without the necessity of using any sensitised plate or employing any photographic process. If a fluorescent screen of glass be taken of sufficient size, and upon which the rays produce a phosphorescent illumination, and the hand be placed behind this screen, and the electrolised vacuum tube or bulb be placed behind the hand, the X rays, proceeding from the vacuum tube or bulb, will pass through the hand and produce an image upon the fluorescent screen, where the flesh and blood portion of the hand, being transparent to the rays, will appear faintly outlined in light, and the bony parts, being practically non-transparent to the rays, appear boldly outlined in dark upon the screen. In this simple method of causing the X rays to produce an image upon the screen, the exact condition of the bony part of one hand after another, of feet, of limbs, &c., may be quickly and accurately observed.

Of course all the above and other experiments on the X rays must be carried out in a thoroughly darkened room.

As a rule, organic substances are easily traversed by the X rays. A vessel half full of blood and the remainder of air exhibits practically little difference on the screen to denote where the blood ends and the air begins. Flesh, hair, wool, feathers, and clothing of silk, wool, cotton, or linen, are readily traversed by the rays. Hence a small animal, such as a mouse or bird when subjected to the X rays shows only the bony skeleton on the screen or plate, the other parts being practically invisible, there being only the appearance of a faint haziness outlining the animal. Earthy substances are, as a rule, little traversed by the rays, and metals are difficult to penetrate, excepting the metal aluminium, which is practically transparent to the rays. A purse made of leather exposed to the rays simply shows the coins contained in it and any clasp which it may have. A parcel containing keys or other metallic articles surrounded by cotton waste, sheets of paper, etc., merely exhibits the keys, or other articles, and the packing is invisible.

The energy of the X rays has been recently demonstrated by observing how many sensitised photographic films superposed upon each other, the rays could penetrate and chemically affect, and it has been found that in times varying from one minute to ten minutes from 12 to 150 films could be effected, from which images could after be developed, and in one case as many as 300 films of paper not gelatinised but sensitised, and superposed upon each other were acted upon by the X rays at one and the same time.

The applications of the X rays to chemical analyses have already been advanced, and the examination of waters for purity and composition by the transmission of the rays through the liquid has been suggested. Progress in this department may be confidently looked forward to.

The most important applications, however, have been in the domain of surgery. Severe injuries by accidents, leading to much swelling of the parts, necessarily render it difficult for the surgeon to determine how far the bone has been affected, and whether a fracture, complete break, or dislocation has taken place. The transmission of the X rays through the affected part quickly indicates the extent of the injury and admits of the proper remedial measures being immediateiy adopted. Already the assistance thus given by the X rays has shown the exact position of a needle in a hand, of a halfpenny in a boy's gullet, of a bullet in a swollen hand, and of a bullet in a girl's head. The rays have also been found serviceable in indicating the progress from time to time of the knitting together of fractured or broken bones, and the healing up of diseased bones. Practically, there is no need to remove

wooden splints or cloth bandages, as these are nearly transparent to the X rays.

Ordinary clothes scarcely require to be disturbed, unless for the presence of the buttons, and the hair on the horse, dog, or ox is no obstacle to the rays. Even wool on the sheep, however thick, is no hindrance. A man in evening dress may be photographed by the X rays, and nothing would be seen, from top to toe, but his skeleton, a few buttons, a stud or two, watch and chain, the buckles of his braces, a pocket-knife, probably a cork-screw, and any coins in his pocket, or even in his purse in his pocket.

I need not dwell on the importance of these X rays in your own surgical practice, for no doubt your professors will enlarge on that subject. All I would indicate would be that I see no reason why this new mode of research should not be as applicable in veterinary surgical practice as it has already proved itself to be an aid in human surgical practice.

There are now even indications that the flesh and blood organs themselves may be capable of being examined by the X rays. Some organs are more dense than others, and the density tends to impede the passage of the X rays. If, therefore, the X rays be so regulated in their penetrative power, more or less, they may be passed into the animal system in such a way as to show the special organ to be examined—say the heart and its pulsations—and thus valuable observations might be obtained. Caution must, however, be exercised, as the X rays have been found to produce a kind of sun-burned appearance on the surface of the skin, so that it is possible that the rays, prolonged in transmission through the animal frame, might be hurtful; but again, who knows, they might equally be beneficial.

In conclusion, I desire to give you—the students—a parting word of advice as to the treatment by others, at least, of the patients under your charge. I feel sure that you, after your college career, will not require such advice for yourselves, but you will, now and again, find people in charge of animals far from kind, and possibly rather rough in their management and care, especially when the animals are out of sorts. At the present I merely give you the sentiment. The practice you will see day by day in the College yard below and in the infirmary downstairs. It is said that a merciful man is merciful to his beast. May I also say a humane man ought to be humane to his beast. Have sympathy with your patients. In human practice sympathy goes a long way in the relief and recovery of the man, woman, or child. And I feel sure that similar sympathy will do much to soothe pain, if not tend to cure disease in dumb animals. Remember we are animals, and so are they. Our animal frames have much in common with theirs—in structure, organs, modes of nutrition, and the like.

We call them dumb animals. Are they dumb? The bleating of the sheep; the lowing of cattle; the neighing of the horse; the bark and growl of the dog; the midnight music of the feline species on our housetops, especially at full moon, composed alternately of sounds of affection and of execration. Is there no language there?—at least, is there no communication of ideas?

Of course I draw a broad line between man and the lower animals. I admit the immensely higher intelligence of the educated man. I acknowledge the presence—mysterious as it is—of the soul in man, but we have a great deal in common with other animals—between the man animal and the beasts of the field. I do not use the words "brute creation." I don't like it. Even in attributes, there is much to be said for the lower animals. The affection of the mother to its offspring, whom she will defend till death; and the affection and friendship of the dog to man, however humble the home and however meagre the meal. So, too, with memory, intelligence, and a certain amount of reasoning power. In the ordinary senses of sight, smell, taste, hearing, and touch, many of the lower animals excel us most markedly.

We enslave the lower animals. We rear them. We utilise them—some as beasts of burden or protection, others as sources of food and clothing. Without their aid the pleasures of our lives would be much restricted, and our bodily sustenance and comforts be much curtailed. If we shorten their lives, let us be humane and sympathetic with them, alike in health and in sickness. We have constituted ourselves their masters. Let us be just and merciful to them.

General CHAPMAN followed by a few remarks, commenting on the many excellent points in the address, and expressed his high appreciation of the veterinary profession, and knowledge of its great value in the army.

Professor W. O. WILLIAMS moved a vote of thanks to General Chapman, C.B., and referred at some length to the change that had been effected in the educational curriculum of the veterinary students in Scotland by the abolition of the summer session, his remarks on that subject being received most favourably. He proceeded to inform the audience that since the first opening of the New Veterinary College twenty-three years ago, his father, its founder, had been present at the opening of every session to welcome the students, the teachers, and his many friends who gathered round him on these occasions. They were all aware that an important professional engagement which required his father's presence in the far-distant island of Jamaica, was the reason of his absence from among them that day. He was bound to confess that he felt somewhat unfitted to represent him, at this commencement of another session's work, a feeling that was added to by a distressing rumour that had been circulated a week or two previously in regard to his father's health. He was, however, delighted to be in a position to inform them that there was not a word of truth in the published statements to the effect that the Principal was seriously indisposed. When his attention was drawn to them, he at once communicated with the Colonial Office, who had relieved his anxiety by a telegram that no such news had ever been reported to that office. And to further confirm the falsity of the rumour, he had received on the day following its circulation a letter from his father, intimating the date of his departure for this country, and that, despite the great heat he had experienced, he was in the best of health. Professor Williams then asked the teachers and students to accept from him the assurance that his father was within a few days' reach of our shores, and would soon be among them again to resume his work as of old.

Mr. WOODS, Wigan, proposed a vote of thanks to Dr. Stevenson Macadam, and alluded to pleasant recollections of student days when under his tuition. He thought that the alchemists of old, who strove so hard, but failed, to discover the elixir of life, had been surpassed by his old friend; as the secret of perpetual youth must have been discovered by his old teacher, who looked not one day older than he did eighteen years ago.

The proceedings then terminated.

THE OPENING OF THE ROYAL VETERINARY COLLEGE, LONDON.

THE session 1896-97 opened at this institution on Thursday, October 1st. There was a full entry of new students and an extra large attendance of old graduates, with many friends and practitioners.

The opening lecture was given by Professor Macqueen. The Earl of Crewe occupied the chair, and the Governors were represented by Sir Nigel Kingscote, Bart., Professor Brown, C.B., and Colonel Lambert, C.B.

Professor MACQUEEN said that there were some very important facts which had a direct bearing upon the career of the student. What had to be done should be done earnestly; time was precious, opportunities were limited,

money was valuable. Therefore, they would not be justified in squandering money, neglecting opportunities, or wasting time. In the very old days veterinary practitioners were regarded as a special race, addicted to original expletives, given somewhat to phonetic spelling, to chewing straws, and to carrying the never-failing ash plant. Whether or not such features ever lived outside of imagination no one knew, but there could be no doubt that the race was now extinct. Veterinary surgeons to-day were very much like other successful professional men, they had the usual endowment of the higher virtues, which they practised constantly. Their general knowledge was as good as that of their neighbours, and their professional attainments left little to be desired. They required, perhaps, more than other men, patience, courage, nerve, and dexterity, and to succeed in practice they must be rich in observation, common-sense, and tact of the better sort, not that counterfeit plausible deception which might send reputation up like a rocket only to fall only to fall like the proverbial stick.

Professional examinations were not conducted by the teachers, but by independent examiners appointed by R.C.V.S.—the profession's Parliament, which sat at 10, Red Lion Square. Too often the Royal Veterinary College was confounded with the R.C.V.S. The distinction had some importance and should be better known. The Royal Veterinary College was the pioneeer veterinary institution of this country; it laid the foundation of their science and it gave the veterinary surgeon his name, and in simple justice it may be acknowledged that the devlopement of the veterinary professions its progress and prosperity, were largely owing to the foresight, liberality and spontaneous efforts of the long line of noble and distinguished governors of the Royal Veterinary College.

Touching the education of veterinary students no one could fail to appreciate the effect upon their future of the recent improvement in the preliminary examination. But that reform was not obtained without opposition. It was held that the higher standard would bar the way to many deserving men who might otherwise enter the profession with no discredit to its members. That objection contained the usual grain of truth, but it took no note of the cheapness of education, which left no reasonable excuse for ignorance. They had been told that poverty in education was no crime, but he confessed that it was very inconvenient. The true student was never baulked by a difficulty; given time, euthusiasm, and its complement, brains, no ordinary preliminary examination would stop his progress.

A faithful, assiduous and efficient veterinary surgeon would surely find his reward, if not in material prosperity, in the acquisition of learning, in the consciousness of good work well performed, and in the final approbation—the "well done!" of the Great Master.

The CHAIRMAN, in moving a vote of thanks to Prof. MACQUEEN for his instructive and clever address, said that the past year had been a most interesting one in the College, in which the result of the changes recently made were beginning to be appreciated—the increase in the term of studentship and the raising of the standard of the preliminary examination. It was gratifying to note that the fears which had been at one time entertained as to the success of the innovation were proved to be groundless. The resolution was then carried by acclamation.

A QUARTERLY meeting of the Council was held at 10, Red Lion Square, on Thursday, October 22nd, under the presidency of Mr. R. C. Trigger.

The minutes of the three last meetings were taken as read and confirmed.

The SECRETARY read a letter from the family of the late Mr. Lowe, one of the trustees, thanking the Council for the vote of condolence which had been

passed by them. Letters, he stated, had been received from three Veterinary Medical Societies, the Royal Counties, the Lancashire, and the Hampshire and Southern Counties, petitioning the College to take steps to obtain an Act of Parliament for the exemption of veterinary surgeons from serving on juries.

On the motion of Mr. SIMPSON, seconded by Mr. LAWSON, it was resolved that the solicitor should be asked to report to the next Council meeting the steps which should be taken for, and the probable cost of, obtaining an Act of Parliament for the exemption of veterinary surgeons from acting on juries.

The SECRETARY also read a communication from Mr. J. G. J. Black, in which he stated that he had obtained a degree of the Ontario Veterinary College in March, 1896, on the understanding that he would be eligible for the army on subsequently attending for two years at a veterinary college in Scotland or London with satisfactory passing of examinations. According to the altered regulations that degree was not now taken into consideration, and he therefore submitted to the Council that they should recognise his Canadian degree, and allow him to finish up his course in London or Scotland with a two years' C. and D. He would then be 25, which would leave only twelve months' time for any vacancy that might occur in the Army Veterinary Department before he reached the age limit.

The PRESIDENT said the solicitor's opinion was that the Council had no power to alter their rules.

The SECRETARY also read a communication from the Melbourne Veterinary College asking that when equality of teaching and examination, etc., had been established, and the English Act adopted in Victoria, the Council of the Royal College of Veterinary Surgeons should grant their diploma to the graduates of the Melbourne Veterinary College, in order that they might be entitled to practise in any part of the British Empire, the same as any other member of the R.C.V.S. The Secretary also read the opinion of the solicitor, which suggested that the application should be referred to a Committee, to consider and report.

On the motion of Mr. MULVEY, seconded by Mr. DOLLAR, it was agreed "That the letters be referred to a small Committee, consisting of the Principal of the London School, Prof. W. O. Williams, Vet.-Captain Butler, Mr. Simpson, Mr. Dollar, Prof. Edgar and Mr. Mulvey."

Professor PENBERTHY asked whether the Committee were to recommend general propositions or deal only with the case mentioned.

The PRESIDENT said the Committee had no power except to deal with the particular case and report to the Council.

Mr. MULVEY said his intention was that the whole matter should be considered, as there was no doubt the Council would be bound to recognise some of those Schools if they conformed to the regulations of the College.

The PRESIDENT said there would be a report, and if the council liked to make that report govern future cases they could do so.

The SECRETARY read the report of the Finance Committee, which stated that the present liabilities amounted to £259 9*s.* 6*d.*, which the committee recommended should be paid; also that after investigating the accounts, they found that the College had incurred a loss of £323 on the last three examinations and they therefore recommended the council to hold only two examinations in England and Scotland each year.

Professor MCFADYEAN declared that the Commitee had fallen into a huge blunder by omitting to observe that they examined 70 more studedts under the three examinations system than they would have examined under the two examinations system. The Committee had omitted to take into notice that in the March examination there were 67 students rejected, and they got for the re-examination of those students a sum of £211. The income for the past year would really have been £211 less than it actually was. He

pressed for an answer to the question: Did the Finance Committee take into consideration that there were 67 students rejected in March and re-examined in July, who otherwise would not have been rejected at all.

Mr. BARRETT said the Committee did that very thing, but the point was that if they had not had the examination in March, they would have saved a very heavy expense, inasmuch as the March examination cost no less than £514 19s. 7d. If those students had been handed on to July, they would have saved the sum of £514 19s. 7d. The result would have been that the loss of £300 odd would have been converted into a gain of £200 roughly.

The report was adopted.

Registration Committee.

Mr. SIMPSON (chairman of the committee) read the report of the Registration Committee, which stated that applications had been received from certain gentlemen for the restoration of their names to the Register, the names having been struck off for non-compliance with sec. 5, sub-sec. 4: the explanations and evidence in support being considered satisfactory by the Committee, they recommended the restoration of the names of Messrs. Walter Frith, W. Galloway, Alexander Paton, and N. Molyneaux, on the usual terms. The committee reported on several cases which were under consideration, amongst them being one in which the letters F.E.M.V.A. were used after the name of a member in a certificate of soundness, which use was justified. The committee asked for an authoritative expression from the Council on that and kindred cases.

Professor PENBERTHY moved "That the expression of opinion should go from this Council that members of the profession should not use any title or any letters not granted by corporate bodies."

Professor PRITCHARD seconded the motion.

On the motion of Mr. SIMPSON, seconded by Mr. FRASER, the Report was adopted; and Professor Penberthy's resolution was agreed to.

Examination Committee.

The SECRETARY read the Report of the Examination Committee. The Committee suggested that Mr. Mettam should be written to, in reply to a letter of his enquiring if an educational certificate would be accepted that had been passed at two or more sittings, referring him to the General Medical Council. With regard to three certificates that had been presented, the Committee recommended that the Secretary should see the Secretary of the General Medical Council on the subject, to know if they would be accepted by them.

Mr. LOCKE thought the Council were not in a very nice position in having to take certificates to the General Medical Council. He thought the best way to get out of the dilemma, and the better way to give justice to the students who entered previous to July, 1896, would be to accept the divided certificates. He moved:—

> That all students who have entered any of the veterinary colleges, prior to July, 1896, on the understanding that divided certificates would be accepted for the general knowledge examination, shall be allowed to present themselves for their first professional examination on passing all required subjects.

Professor W. O. WILLIAMS seconded the motion, but the Solicitor advised, on the ground that it was an alteration of a bye-law—Byelaw 52—that it was out of order, and it therefore dropped.

On the motion of Mr. MULVEY, seconded by Mr. SIMPSON, the report was adopted.

Court of Examiners.

The SECRETARY read the report of the Examiners, which showed that in Class A 82 students were examined, with the following result:—Edinburgh: Passed, 24; rejected, 12; Honours, First Class, 2; Second Class, 12. Glasgow: Passed, 9; rejected, 2. London: Passed, 24; rejected, 11; Honours, First Class, 3; Second Class, 9. The Examiners considered the result to be highly satisfactory. The only suggestion they made was that the examinations should, if possible, be conducted at the Freemasons' Hall in Edinburgh as heretofore. The system of examining at the teaching schools was, in their opinion, not advisable, and the room allotted to Class A at the Clyde Street College was unsuitable owing to the distracting noises made by the heavy traffic outside.

The Report on Class B gave the following information:—Edinburgh: Passed, 20; rejected, 18; First Class Honours, 4; Second Class, 7. Glasgow: Passed, 6; rejected, 9; Second Class Honours, 3. London:—Passed, 21; rejected, 11; First Class Honours, 2; Second Class, 6. In Class C. (Practical) the examiners reported that a fairly large number of students presented themselves, with a somewhat smaller percentage of passes than usual—the absence of manipulative skill and practical knowledge being the chief difficulty.

With regard to Class C (4 years) the examiners reported that the majority of written papers reached a fair standard and carried good marks, raising the proportion of passes above the average. They suggested that it would enable them more fully to carry out their instructions were arrangemeuts made at ensuing examinations to conduct the work in a stable provided with horses, harness, etc.

In Class C (3 years) the following figures were given:—Edinburgh: Passed, 21; rejected, 12. Glasgow: Passed, 8; rejected, 5. London: Passed, 18; rejected, 9. The examiners recorded a marked improvement generally in the characters of written papers.

Mr. HARTLEY seconded the motion, which was agreed to.

Professional Examination.

On the motion of Mr. ABSON, seconded by Mr. ELPHICK, it was resolved that the Professional Examinations commence on December 11th.

In reply to Professor WILLIAMS, Professor MCFADYEAN said that the Examiners would reach Scotland about December 17th.

Fellowship Examination.

On the motion of Professor PENBERTHY, seconded by Mr. HARTLEY, it was agreed that the Fellowship Examinations should take place on Saturday, December 12th.

Election of Auditors.

On the motion of Mr. WRAGG, seconded by Mr. HARTLEY, Messrs. Woodger and Warren were unanimously re-elected as auditors.

Special Meeting.

A Special Meeting of Council was afterwards held, the President occupying the chair, to consider certain proposed alterations of bye-laws.

With regard to Bye-law 59, the following notices of motion had been given:—

(1) By Professor MCFADYEAN:

> There shall be one Examination on the conclusion of each full session, and another Examination at Christmas (for rejected Candidates who have conformed to the bye-laws.) There may also, at the discretion of the Council, be a third Examination in the year.

(2) By Mr. MULVEY:

There shall not be more than two Examinations held during the year, the date of such Examinations to be fixed by the Council at their meetings in January and October.

Or, as an alternative:

There shall not be more than two Examinations held during the year, one in March, April, or May, and one in December or January.

(3) By Mr. SIMPSON:

There shall be two Examinations held during the year, one in May or June, and one in December or January.

In moving the resolution standing in his name, Professor McFADYEAN said that probably most members of Council recollected that the motion was one that had been put down by Mr. Hunting, and was prompted, he believed, by the declaration that the holding of a third examination during the year would lead the finances of the College into difficulty. If he were satisfied that the Council of the corporate body was going to lose a considerable sum of money through the holding of three examinations at equal intervals, he should not for a moment press for them, feeling certain that that Council would not entertain any such proposal. The notice of motion which he had given did not compel an examination, and the London school was prepared to give it up. He would like to make an amendment to his notice of motion, and leave out the words "Rejected candidates who have conformed to the Bye-laws," because that would exclude cases of students who, for example, from sickness or some other cause, were unable to present themselves at the previous examination. Moreover, it would be a disadvantageous thing from the point of view of the Council, and it would considerably cut down the number of students coming up in December. He, therefore, moved the motion standing in his name amended as follows: "That there shall be one examination on the conclusion of each full session and another examination at Christmas. There may also, at the discretion of the Council, be a third examination in the year."

Veterinary-Colonel LAMBERT seconded the motion.

Mr. SIMPSON asked if it would not be convenient that the three notices of motion should be considered at the same time. He was perfectly sure there was a desire on the part of Professor McFadyean, Mr. Mulvey, and himself, to try and come to some practical solution of the difficulty.

Professor W. O. WILLIAMS said he could not discuss a thing without understanding it. He should like to know what a full session was.

The PRESIDENT said a full session was 30 weeks.

The SOLICITOR said the session was defined in Bye-law 66: "A session shall be a period of not less than 30 weeks, exclusive of the recognised holidays of the institution at which the student shall have studied."

Professor SHAVE asked the treasurer whether it was impossible, financially, to have three examinations in the year?

Mr. WRAGG said all things were possible; but, if the Council did have the three examinations, they would get rid of the whole of the funded money and their building.

Professor McFADYEAN agreed to his (Mr. Simpson's) proposing an amendment to his resolution, and he therefore moved, "That there shall not be more than two examinations held during the year—viz., in London in July and December, and in Scotland in May and December."

Mr. MULVEY said that meant all he asked by his resolution, of which he had given notice, and he, therefore, begged to second it.

The PRESIDENT therefore put the motion, "That there shall be not more

than two examinations held during the year, viz., in London in July and December, and in Scotland in May and December.

The resolution was carried unanimously.

Stable Management.

Professor SHAVE moved—

That stable management be struck out of the second or B. examination and be added to the third or Class C. under veterinary hygiene and dietetics.

His object was particularly to secure the undivided attention of the Class B students to the subjects of anatomy and physiology. He suggested to the financial department of the Council that they would save one-third of their fees for Class B examination by adopting his motion. If the motion was adopted the students would be examined in stable management at the third examination and also at his fourth examination.

Mr. ABSON seconded the motion.

Professor W. O. WILLIAMS asked if Professor Shave meant stable management, manipulation of domestic animals and principles of shoeing.

Professor SHAVE said he did and included it in the subject of hygiene.

Mr. MULVEY said he was altogether opposed to any alteration of the kind. The matter was very carefully considered and at the meeting of the principals of the schools, the examiners of council agreed to the subject being put in the place it now occupied. It was well known that students for years were turned out with scarcely any knowledge of stable management or the internal economy of the stable, and in his opinion they could not too early obtain that knowledge, and it could only be found out that they had it by examination. He considered the best place for it was in Class B and he should order for its remaining there.

Professor PENBERTHY said he was of the same opinion. As a member of the Finance Committee he wished to say that that committee did not put money before competence; competence first and then money. They regarded a competent veterinary surgeon as being best made by education, and examination in matters concerning animals, healthy and diseased.

The amendment was then put and carried, and Professor Shave's motion on being put to the Council was lost.

A vote of thanks to the Chairman concluded the meeting.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

(*Continued from page* 284.)

Interesting Cases.

BY JOSEPH W. HEWSON, M.R.C.V.S., CARLISLE.

Open Joint in a Mare.

History.—On July 5th a gentleman came and asked me for a bottle of lotion for a mare which had been kicked on the inside of her hock. I advised him to have the mare seen to, as from the description given of the wound it was evidently in a dangerous position and likely to result in open-joint. He, however, did not think it necessary for me to see the mare then, and left promising to send word if she grew worse. On July 9th I had an urgent message sent to attend, and on examination I found it to be a severe case of open-joint.

Treatment.—My first care was to have the mare put comfortably in slings, and have cold water applied to the joint for two hours night and morning, after which the leg was dried and a little of caryophylli applied directly to the wound with a brush. This treatment was continued until the 11th when a strong blister of ung. hydrarg. biniodid. was applied right round the hock joint.

At this time the discharge was a mixture of synovia and pus, having a curded appearance.

Within a few days the discharge ceased and the wound apparently healed up, but unfortunately the discharge again occurred soon afterwards, with the same appearance as before, but in much greater quantity. The mare was kept as quiet as possible in slings, and in four or five days the discharge again ceased.

On August 19th I found the hock very much swollen and very painful. I considered it best to fire and re-blister. This was done, and the mare turned out to grass three weeks afterwards. She was run out until the latter part of October, when it was found that the hock was permanently anchylosed and in a flexed position, so that the leg was no use to her, being too short. I advised the owner to have her destroyed. This was done, and I have the hock in my possession. (Specimen shown.)

I may state that the unfortunate ending of this case was due to it being neglected until such an amount of inflammation of the bones had set in that it could not be combatted. My prognosis was very unfavourable from the first. I noticed the peculiar nature of the discharge as indicating a destructive or ulcerative process going on in the joint.

Parturient Laminitis.

This was a case in a mare which had foaled but retained the placental membranes for about ten hours, when they were removed and the womb syringed out with a weak disinfecting solution. Fearing that the case might develop into laminitis, a small dose of quinine sulph. was administered.

Twelve hours after removing the placenta I was sent for, as the mare was showing signs of acute laminitis. On my arrival I found the mare to be suffering acute pain in her fore feet, standing in that position peculiar to laminitis, and almost unable to move. She was very feverish, temperature 106 F., pulse about 80 per minute and breathing hurriedly; the mucous membranes were of a reddish yellow colour, with a slight fœtid discharge from vagina.

Treatment.—I had the shoes removed and hot linseed poultices applied to feet; half drachm doses of quinine were given every eight hours for 48 hours, during which time the acute symptoms passed off, leaving the mare very lame. Cold water poultices were then applied for about a fortnight, when I had her feet dressed, good broad round shoes fixed on, and a strong blister applied round the coronets of both feet.

Soon afterwards she was turned out to grass and a blister re-applied. She improved slightly, but never was able to work, and consequently she was destroyed. I obtained one of her feet, which shows great absorption of the anterior portion of the os pedis, the result of pressure from the exudation. (Specimen shown.)

A Decomposing Fœtus.

At the time the mare was due to foal, she made full preparations, but showed no signs of actual labour. Gradually the symptoms passed off, and no more notice was taken of her for about a fortnight, when a discharge was noticed coming from the vagina. This continued for about a week, when I was consulted. On examination, I found the os uteri partly dilated with a breech presentation. As the mare still showed no signs of labour, I drew the tail of the fœtus into the passage and left her, with instructions that I was to be sent for immediately she showed any signs of paining.

Twenty-four hours after this I was sent for, and now found the os completely dilated and labour commenced. On attempting to remove the fœtus, I found it to be very much decomposed, the hair coming off when touched. As I could not alter the position or raise the hind legs into the passage, I

immediately got to work to remove the limbs from the body. This done, I got the foal away with a great deal of difficulty, and on examining for the placental membranes, I found they were only represented by a filthy liquid, which I removed as best I could and washed out the womb with antiseptic. The mare was very much exhausted and, in my opinion, not at all likely to get better. Mild stimulants were administered to her and she was carefully nursed. On my visiting her next day I found her to be very much improved, but on the following day she developed a very acute attack of weed in her near hind leg. This was treated much in the usual way, and the mare made a good recovery.

This case seems to me to be of great interest as showing the length of time a mare may carry a foal after it is dead, as no doubt this foal had died when the mare first prepared. Septic absorption had doubtless been prevented by disunion of the fœtal membranes from the womb.

Case of Colic.

This yielded to ordinary treatment, inasmuch as the mare got relief from pain, afterwards passing a large quantity of urine. Immediately upon this she began to strain as though she still wished to urinate. This paining became excessive, and had continued for several hours when I was sent for. On examination per rectum I found what I at first thought was the bladder much distended, but on more careful examination I found it was a portion of the bowel distended with gas, which had evidently rushed into the seat of the bladder after the latter had discharged its contents. This, in my mind, was the cause of the symptoms already described, by pressure on the neck of the bladder. I at once inserted a fine trocar and canula through the wall of the vagina into the distended bowel, and liberated the gas; then gave a small opiate, and all signs of uneasiness ceased. A few hours afterwards I found the mare all right. This case is of interest as showing the very great benefit derived from the use of the trocar and canula in cases of severe tympanitic colic.

Discussion.

The PRESIDENT said Mr. Hewson had opened up a field for argument, and, in doing so, had not tried to exhibit only his abilities, as he had given them cases which were failures.

Mr. THOMPSON said everyone of the subjects were interesting, and good practical subjects, which they met with almost daily. One of them alone—open joint—was quite plenty for an afternoon's discussion. They generally found that the small external openings were dangerous internally, and that in order to treat open joint successfully they should be called in early. He had great faith in continuous cold water applications for thirty-six or forty hours, or even for five days. He had an irrigation tube on purpose. Failing that he applied a smart blister, but as for creosote or antiseptics, etc., he did not believe in With reference to the case of parturient laminitis, he would not allow a cleansing to remain inside a mare more than four hours. Many people believe in using antiseptics and washing the womb out twice a day. Too frequent a use of antiseptics causes irritation of the mucous membrane. He believed in washing the womb once with clean water, and then the only antiseptic he used was an ounce of tincture ferri mur. and a gallon of water. In some cases of septic laminitis, if the animal was very fat, it ran on to such a degree that the septic material caused gangrene of the laminæ and killed the patient in a very short time. The case of colic described by Mr. Hewson was an interesting one, and his treatment was bold and heroic. They were too slow at times in introducing the trocar. He had on several occasions tapped through the rectum rather than through the side. He thought this was good surgery; and he complimented Mr. Hewson on the way he handled the case.

The whole of the cases were practical, and they could not do better than fall back upon them for discussion at next meeting.

The PRESIDENT undertook to open the discussion on the five subjects at next meeting.

Mr. CARLISLE observed that hardly two veterinarians would treat these cases alike. In a bad case of open joint he put the animal into slings and took care that he was not disturbed, as perfect rest was essential. They should not allow over long a time to elapse before putting on a smart blister. It would disturb the animal, but he had often most success from that treatment than from anything else. It was a difficult thing to get an external application to the opening to act beneficially. If ever ulceration commenced it defied their treatment, whatever they might do

Mr. GARNETT seconded the motion for the adjournment of the discussion, which was agreed to. He added that he wished to bring forward at next meeting an outbreak of gloss-anthrax which took an epidemic form.

It was agreed to hold the next meeting on the second Friday in December.

A vote of thanks to the PRESIDENT, moved by Mr. GARNETT and seconded by CROUDACE, concluded the meeting.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 291.)

Discussion.

Mr. PARKER said Mr. Hunting alluding to dislocation of the shoulder said he should be happy to hear of such a case. Well, he had seen one. He assisted in reducing it and the horse got perfectly well afterwards. There was no mistake about it being dislocated, and furthermore, it was at the time reported in *The Veterinarian.* He had also read of other cases.

Mr. HUNTING: Was there any diagnostic symptom?

Mr. PARKER: Yes.

Mr. WARTNABY: Did you use chloroform?

Mr. PARKER: No. The case took place about 38 years ago.

Mr. MALCOLM said he had listened with much pleasure to Mr. Hunting's paper. It was certainly very difficult, as Mr. Hunting said, to diagnose the exact cause of shoulder lameness. Mr. Hunting had asked them to say whether they had met with a case of luxation, and he (the speaker) was much interested in Mr. Parker's experience. Personally, he had never seen a case, nor anything approaching it. Mr. Hunting had referred at some length to cases of fracture of the first rib, in which there was marked dropping of the elbow, and had also reminded them of cases which were described by Möller as paralysis of the radial nerve characterised by the same symptom. He must say he had had somewhat similar cases, as far as symptoms went, but he had diagnosed quite differently. He diagnosed them as severe strain of the caput muscles. In that condition they found a marked symptom in manipulating the leg, so marked, indeed, that their stablemen could recognise it as well as himself. A horse suffering from this sprain could not bear his leg to be pulled forward, and reared up whenever the caput muscles were extended in that way. The accuracy of the diagnosis was borne out by the subsequent history of the case, in that they always got very marked atrophy of those muscles, which seldom regained their normal bulk, and although it usually was a considerable time before the horse was fit to work again, yet in many cases the horse became practically sound ultimately, and continued so for years. He had not been able to see any of those sudden recoveries.

Mr. HUNTING (interposing): The commencement of recovery.

Mr. MALCOLM, accepting the correction, and continuing, said he had not been able to notice that in the cases which had come under his own observation. If it were paralysis of the nerve, he could not understand the excessive pain which the horse experienced when the limb was raised, and if it were fracture of the first rib he could not understand the marked localised muscular atrophy. These facts, the immediate excessive pain and the marked subsequent muscular atrophy, impelled him to believe that they had got severe muscular injury. He had seen a good many so-called cases of shoulder slip, but could say little about their production. He had once a marked case of lameness due to axillary abscess following strangles. The horse ultimately did well and made a rapid recovery. He remembered another case, in which there was a large abscess situated under the *levator humeri*, just above the shoulder joint. The case got on well, and did not need an operation such as he had seen performed for the removal of tumour or abscess in that particular region. In conclusion, he congratulated Mr. Hunting upon his courage in admitting his mistake in the case of foot lameness diagnosed as shoulder lameness. A mistake was not uncommon, but it was more uncommon to have the courage to admit it.

Mr. CROWHURST said he had seen many of the cases referred to by Mr. Hunting in the matter of young horses which had been used for the plough and they soon got well after a little careful treatment.

Mr. W. S. CARLESS, after expressing the pleasure he had had in listening to the paper, said he had had an interesting case of a thoroughbred yearling filly, galloping against a tree and displacing her shoulder. She was under his care for five months, and during that time she was fomented and blistered, and also allowed a little exercise. The other day he saw she ran second at Manchester. A good many people saw her, but he did not think there was anything beyond the displacement of the muscles. She was in Leader's stable, and he believed that now one shoulder was as good as the other.

Mr. TRIGGER said that Mr. Hunting had laid before them a most interesting dissertation, but he thought there was little left for him to add. Shoulder lameness was somewhat rare, and would only occur once where foot lameness might occur 40 or 50 times. As to the pain to the horse while examining, he thought that depended upon whether they gave the shoulder an outward twist or not. He thought that dragging of the limb posterior to the other was one of the best symptoms. The rounded action was, he thought, diagnostic of knee lameness rather than shoulder lameness. After citing one or two illustrative cases, the speaker went on to refer to the cow, which, he was afraid, was beneath Mr. Hunting' dignity.

Mr. HUNTING: Above my intelligence. I know nothing about them.

Mr. TRIGGER said it might interest them to know that luxation was a very common thing in cows, and the cases were very distinctive. They made the most absolute recovery, the treatment consisting of embrocation or a blister, the great thing being that the cow is to be kept tied in her stall and not allowed to move. There were also cases of neuralgic lameness, either directly or indirectly, and he called to mind the case of a grey mare, which was sometimes lame and sometimes sound, according to occasion. He believed it entirely arose from the nerves under the shoulder joints. A pony of his own evinced the same symptoms, suffering at times unmistakably from some sort of shoulder lameness. Regarding the blunder which Mr. Hunting said he once made, he thought it only illustrated to them how easy it was to make a mistake.

Mr. A. GREEN said he saw plenty of rough work, and shoulder lameness was nothing fresh to him. He remembered very well a case of dislocation of the shoulder which occurred to a canal horse, near Smethwick. It had fallen into the water, and being an old horse, was destroyed, rather than the expense should be incurred in the matter of treatment. He also remembered

a case in a cow, which was caused by "revelling." He had known cases of disease of the bone, and when that acquired a chronic form, the slaughter-house was necessary, the extreme pain to the animals not justifying their being kept alive.

Mr. WARTNABY said it was always a pleasure to them in the Midlands to have a visit from their professional brethren in London. He had little to add to the discussion then in progress. He agreed with nearly everything Mr. Hunting had said, and particularly with his statement that it was difficult to locate the seat of the injury in shoulder lameness. He found it very difficult in some cases to decide whether the lameness was really in the shoulder at all. He shared Mr. Hunting's opinion that pressure of the fingers in some cases was not a diagnostic guide, although in other cases, of course, that was. He proceeded to mention an interesting case of shoulder lameness, where, he thought, the trouble must have been of a nerve character. He had himself a high-couraged cob, and an assistant drove him out one day for about thirty miles. She suddenly dropped dead lame. He (the speaker) thought it strange, and at first blamed the assistant, thinking she would be months before she got round, but to his astonishment she was nearly better the next day, and on the day afterwards quite better. This happened many times when she went on a long journey, and in the course of a few hours' rest she would be sound again. With regard to those cases designated shoulder slip, he agreed with those gentlemen who attributed it to ploughing. He had seen a good many cases in plough horses, nearly always young animals, and it was generally the furrow horse. He agreed also with Mr. Trigger that those cases were very marked in the cow. There was lameness in the shoulder, the cause of which Mr. Hunting had not touched upon, and that was rheumatism. He himself had had several cases. With regard to the case which Mr. Hunting had related wherein, after fomenting the shoulder the trouble manifested itself in the foot, he (the speaker) must plead guilty to a similar error, and he now always examined the foot very carefully as well as the shoulder. He once knew a case of shoulder lameness follow poll-evil, and he wondered whether the affections had anything to do with each other.

Mr. JONES mentioned several cases bearing upon the subject which he had seen. He once went to examine a cow with a dislocated shoulder, and it had a speedy and marvellous cure. Being brought out, she ran round the yard like mad and in about ten minutes put her own shoulder in.

Mr. CROWHURST said that the remarks of the previous speaker about rheumatism brought to his mind the case of a horse he had which had a most acute attack of rheumatism in the left shoulder. It was treated, and the rheumatism shifted round to another place, a cure being ultimately effected.

The CHAIRMAN, in winding up the discussion, said he took the opportunity of thanking Mr. Hunting for his extreme kindness in coming before them with such an interesting paper, and he hoped he would be gratified with the discussion which had taken place. There was little left for him to add. Nearly all their cases of shoulder lameness were treated on the negative principle. They got nothing positive to go by, and simply because there was no external sign they came to the conclusion that it was shoulder lameness He thought many cases treated as such were never shoulder lameness at all. Regarding the suggestion that the patient while under treatment should be kept perfectly still, he believed the muscles would waste from inaction rather than from anything else. Respecting the mistakes made by veterinary surgeons, he thought they ought to examine every case in the foot. He was speaking from experience, and he had been far more careful in examining cases of lameness since what once happened to him with a very valuable cart mare.

Mr. HUNTING replied. He said that Mr. Parker's case of dislocation should clear up any doubts he may have had as to such a lesion taking place, but it would have given him stronger faith if it had not happened so long ago as 38 years. However, he would accept it as far as it went. Mr. Malcolm said he had case answering the description of the symptoms he gave as due to fracture of the first rib. Mr. Malcolm thought the lesion was sprain of the extensor muscles and that he proved his point by manipulation. When he drew the limb forward it caused great pain to the animal, which was due to the stretching of the injured extensor muscle. But unfortunately in cases in which the rib had been found to be broken, precisely the same symptoms had followed the lifting of the leg, as he had described. Therefore this symptom was no proof of the correctness of his diagnosis. Then Mr. Malcolm thought that atrophy of the muscles was a further proof of the correctness of his diagnosis, but unfortunately, in cases shown by *post-mortem* to be due to fracture of the rib, atrophy also existed, and there was nothing wrong with the muscle in the early stages. He agreed with Mr. Malcolm that the wasting of the muscles was never completely replaced. There was a curious circumstance about the origin of cases. Mr. Malcolm thought his horses suffered in consequence of mis-steps through getting the foot in the soft ground. Now, in London, the cases which he (Mr. Hunting) had seen had nearly all been 'bus horses, and the history was nearly always the same. Either the horse had stumbled and nearly fallen, or he had started suddenly and stumbled, but in neither case was there an actual fall. Another circumstance worth noting was that the animals were always high-couraged ones. He never knew it occur in a riding horse, and he therefore wondered whether a collar might have something to do with it, at any rate he offered that as a possibility. Mr. Crowhurst referred to shoulder slip, and said he did not think those cases were accounted for by original nerve injury. If so, said Mr. Crowhurst, why did they recover? He (Mr. Hunting) was inclined to think that Möller was apt to classify shoulder injuries without sufficient evidence, but it did not follow that if a nerve were injured that nerve might not recover the same as any other structure. He proceeded to express his acquiescence in other speakers, and added that all illustrated cases to his mind, were more interesting when followed by a *post-mortem*, at any rate he had stronger faith in his own diagnosis after a *post-mortem* than before. He was asked why he did not touch upon rheumatism. Well, the reason was that he never had a case in the shoulder and recognised it, although he accepted the case mentioned by one of the speakers where the disease shifted from one place to another, as being undoubtedly rheumatism. As regarded Mr. Wartnaby's association of poll evil and shoulder lameness, he was inclined to think it was a coincidence. He appreciated the meeting's kindness towards him in his endeavours to interest them, and if satisfaction were to be derived from a very complete agreement with the opinions he had advanced, he ought, indeed, to be satisfied. But he did not know that he was altogether satisfied, as he wanted to extract from them a little more that he did not know. It was difficult to be perfectly sure of their diagnosis until after a *post-mortem* examination, but it was difficult to persuade owners, in the interests of science, to have their animals killed where there was possibility of their recovering. It was all very well to theorise, but it was time, he thought, they had some arrangement whereby a practitioner's expenses could be defrayed in cases where he might hold a *post-mortem* for the benefit of science. Shoulder lameness was one of those things upon which *post-mortems* would throw a good deal of light. There were many other cases where a few pounds expended on the purchase of the horse, and a careful *post-mortem* examination would add to our general stock of knowledge.

Mr. MALCOLM moved a hearty vote of thanks to Mr. Hunting for his

address, which was seconded by the HON. SECRETARY and unanimously approved.

The President of the College.

The CHAIRMAN, at the close of the meeting said: Before we separate we ought to congratulate one of our members upon his promotion to a most enviable position. Mr. Trigger, as you are aware, has been made, since our last assembly, President of the Royal College of Veterinary Surgeons. We, as an association, are particularly proud of him in that capacity, for he was one of your nominees, and we trust that his year of office will be a thoroughly happy and successful one. I am likewise hoping that the Midland Counties will not only provide the president this year, but that one of our members will hold the same position next year.

Mr. TRIGGER, by way of reply, said: Your kind remarks have taken me by surprise, but as you have given me this opportunity, I should like to acknowledge that the position which I occupy to-day dates entirely from the day I joined this association. From that day, probably 20 years ago, I have received greater kindness from this association than any merits of mine deserve. Since you did me the honour of returning me to the Council, it has been my endeavour to give every attention to your interests and to the politics of the profession generally. I have not lightly undertaken the duties of president, but I have done so with a great sense of their responsibility. I hope the profession may pull together. I was present at the examinations in Scotland, both at Glasgow and Edinburgh, and I was glad to see they are being carried on in a satisfactory manner. If the Council will only let the examiners alone, we are on the eve of far more satisfactory times than we have had in the past. Very great changes have taken place, and now that things are getting into a good working groove, I hope they will be allowed to remain there. I think there is one matter which you will all have to consider, and that is the pecuniary position of the College. It is as much a matter for the profession as it is for the Council. I think that if the College is to maintain the dignity and position it ought to maintain among other corporate bodies, it should be a much richer body than it now is. Our sole income at present is from the students' examination fees. We can't save money; we can pay our way, and that is the most we can do. I do think it is a question the profession should consider, and as there seems no other way of raising money to make our position better, I would suggest the payment of a small registration fee, say 10s. per annum, by every member of the profession. If you consider that you will see what it means. We should soon be able to hold our own in everything that goes on, and if we are to maintain our dignity and be the progressive institution that we hope to be, we must have money to do it with. It will be the duty of the president to exercise no begrudging spirit so far as his own pocket is concerned, but that will not meet the difficulty, ii you consider how small a thing it means. We now supply a Register at a dead loss, which means about £50 a year; but if every member paid a registration fee of 10s. per year, we should in a few years be an immensely richer body than we are to-day. We should be in a position to give scholarships, and take a leading part in all scientific matters, which at the present time we cannot possibly do. We cannot bleed the students any more —we have now reached the utmost limits in that direction. I invite you to think over what I have told. If, as I have suggested, we could adopt a small annual registration fee, it would not harm anyone, but would be an immense source of benefit to our college.

Next Meeting.

The CHAIRMAN asked the meeting to decide where the next quarterly gathering should take place

Mr. JONES proposed, and Mr. OVER seconded, that it be at Leicester.

Mr. TRIGGER proposed, and the Hon. SECRETARY seconded, that the meeting be again held at Birmingham.

Mr. MALCOLM and others took exception to the amendment on the ground that it was desirable, in the interests of the Association, to change the *venue* as much as possible.

Eventually the amendment was withdrawn, and the original motion that the next meeting be held at Leicester was unanimously agreed to.

A vote of thanks, on the motion of Mr. BURCHNALL, seconded by Mr. CARLESS, having been accorded to Mr. Gooch for his services in the chair, tea was partaken of in an adjoining room, after which the members dispersed.

H. J. DAWES, *Hon. Sec.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 277.)

Tuberculin Testing and Discussion on the Merits of Mallein.

As with all new medicines and preparations, most of us, when first we hear of them, are impelled to listen, then we are interested, and in looking before we "tak the loup," questions arise which we would like answered. So is one inclined to inquire about tuberculin—What is it? How is it prepared? What is the explanation of the temporary storm in an affected animal injected with tuberculin? and why is there no appreciable result when a healthy animal receives a full dose?

There is no doubt that the opinions that many of us hold as to the diagnostic value of tuberculin requires to be thoroughly substantiated and its seeming weaknesses explained before the agent can occupy its proper position as a reliable test for tuberculosis.

Tuberculin, or Koch's lymph, is prepared by growing the bacillus tuberculosis for two or three months in glycerine broth, then boiling the cultnre, concentrating over a water bath, and filtering through porous porcelain. So you will see that it consists of the concentrated sterilized liquid in which the bacillus has been grown.

It thus contains no living bacilli, for they cannot survive the boiling, but it does hold all the chemical poisons which are secreted or manufactured by the bacillus, and which in the tubercular body produce the changes that we recognise as tubercular disease.

I think, gentlemen, that the question as to how the re-action is produced in affected animals by the injection of tuberculin is one for pathologists only, and any explanation which I might offer as an ordinary practitioner would of necessity be speculative.

The theory that a small dose of artificial tuberculin, added to the certain amount that is produced by the bacilli in the tubercles, acts on the nerve centres and the tubercles, causing a temporary augmentation of the diseased process, with a consequent rise in temperature, recognised as "re-action," is no doubt fairly satisfactory, but I think it is open to criticism.

Now, gentlemen, I think I have occupied my full share of your time, and as this is a continued discussion, I have no doubt that many of you have valuable statistics to bring before the meeting.

Mr. J. WEIR: I would just like to bring under the notice of our President and Mr. Begg one thing I tried to bring out at last discussion, and that is this: is there any curative agency in the repeated inoculation of mallein or tuberculin? As far as I can read of them—and I have no practical knowledge of

tuberculin—I say that although some animals react to the first injection, they frequently don't react to the second; and although they do react to the second, it is always in a minor degree, and ultimately they don't react at all to repeated injection. Has the repeated injection of these agents any curative effect on these animals in the cases of tuberculosis in cattle and glanders in horses? As far as glanders is concerned, I have not had a case for two years, and never had a chance to try mallein.

Mr. ANDERSON: I will repeat, by way of stimulating the discussion, that I have not much faith in tuberculin, and it would be dangerous to advise the wholesale use of it in stamping out tuberculosis. I again say that I believe in the arrested stage of tuberculosis, of which there are a great number of cases you get no reaction whatever. In cases where there is a complication of other diseases along with tuberculosis, it is also dangerous. But where you have a case of tuberculosis—a well-marked case in the commencement of the disease—I believe it is not only serviceable, but very useful in diagnosing these cases; and so far as mallein is concerned, I am like Mr. Green, I have a greater faith in the use of it. I think mallein certainly the most reliable test for glanders that we could dream of getting, and I would advise everyone who has the least suspicion of cases of glanders, to at once test them. I had one the other day where a horse had been running at one nostril for at least six months, and we tried everything, but nothing could stop this sort of gleet; he commenced to make too much water, and looked unthrifty-like in his coat. I determined to try him with mallein, but got a negative result. The horse is now doing better. I think it should be more used than it really is. If the other members have given it a trial, they will perhaps give us the result of their experience.

Mr. TAYLOR: I do not know that I can give you very much. I have been working a good deal amongst tuberculin and I cannot support Mr. Anderson and Mr. Green. The longer I work with it, I think that, systematically used and proper attention given in every way to it, I was going to say invariably, but I would say almost invariably the big percentage of reactions we get on *post-mortem* prove the good of tuberculin. I have gone over several hundreds and I think I have 47 *post-mortems* that I have taken a note of; and, when I say that the thing should be done systematically, I do not say that I did it at first systematically. I think it is a thing you must come to know how to use. I will tell you how I proceed. I take advantage of the Sunday, not so much for the benefit of the animal as getting the benefit of the people about the farm. If there is any cow in a stock I have suspicion about I certainly never would inoculate her. I always try to get a normal temperature and the cow apparently healthy then, I have no hesitation in inoculation. At 9 or 10 p.m. I inoculate them, then I take their temperature every two hours after four o'clock next morning. At first I did not do that and in two *post-mortems* I got no reaction and yet we had tuberculosis in the lungs when they were killed. From my after experience where I think I went wrong was, in not taking the temperature systematically every two hours. I remember a cow at Newton that we tested; the dairyman was left in charge to take her temperature, and I knew he could do it. She was tested at nine and in the morning her temperature was 104½ and after that it fell rapidly. I don't remember seeing that cow opened, but I am of opinion that she was tuberculous. With regard to what Mr. Weir says about the curative action of it, I know of one cow which has been inoculated for three years and it was tested last Friday and it has always run up to 107⅓°, and it has been looked upon as a good cow though tubercular. Another thing, I think the heat of the byre has a great deal to do with the temperature. I remember one case where we were testing some cows: the first time I took them they were about 103°, the byre at that time being 70°. We opened the ventilators and when I came

back the byre was at 62° and those cows had fallen in their temperature. So that I think a great many things have to be attended to in order to make the test a success, and what makes the test a non-success is the want of attention to these things.

Mr. ALLAN: I am very much like Mr. Anderson, I have not implicit faith in tuberculin. I have found mistakes both ways. I had a cow, one of ten that I injected, and she rose to 106·2, and nevertheless was a healthy looking cow; some six weeks after that she was sent to the butcher, and I made careful examination and could not find signs of tuberculosis. In the same stock there was one that did not react at all; she was sent to the same butcher, and she had signs of tubercular disease on the pleura costalis. Some may say it was not carefully done, but I say I did it very carefully and had the temperature taken as regularly as possibly could be. There are very few *post-mortems*. Mr. Taylor says there have been over 40, but I don't know whether they are correct. What I would call a perfect test would be to take a number of cows and inject the whole lot, 10, 15, or 20, and get those slaughtered that don't react as well as those that do. It is a well-known fact that tuberculin which, when put forward first, was to be a curative agent, has become a total failure. I should like to know whether it is to become a curative agent in the lower animals. As a diagnostic agent it is, however, of better value, but in the other way most of the farmers would be better to know nothing about it. Unless you take a lot of cattle, and have a thorough trial, I say that we are deluded. As far as I have gone, I have no great views of it being a certain thing. I have no doubt if you take carbolic and inject it into a nervous cow that it will have the effect of raising her temperature.

Mr. DOUGLAS: I think we are still in the experimental stage with tuberculin. I have tested tuberculin in an Ayrshire dairy district. When it was introduced two or three years ago I tried it on a large number of suspected animals only, and in 99 per cent. on *post-mortem* I found tuberculosis. I think it is of great value as a diagnosing agent if properly used, and I have had a large number of *post-mortems* both on suspected and healthy-looking animals. I have had a healthy one taken out and slaughtered for the benefit of owners and neighbours who came to see it. Last year one gentleman had a number of cows he wanted me to test. I tested them, and seven out of ten gave a reaction. One was a little thin, so he killed her and found her affected with tuberculosis that nobody could have detected during life. A week or two after he thought he would have them killed; and he sent them to the butcher. Their temperatures, to begin with, were 103, and they rose 3 degs. They were all visibly affected on *post-mortem*. I am bound to have faith in tuberculin tests. I think we, as veterinary surgeons, have got to go further. I am even confronted with the question: If they give a reaction, what are we to do with them? Don't you think it would be well if we came to some finding? If a cow takes on flesh and feeds well, is that animal not to be passed as good food, though it gives a reaction? If there is anything the matter, is that cow to be rejected for giving milk? I think these are most important questions. If a cow feeds well, takes on flesh, and carries a good carcase of beef, I would have no hesitation in passing her as an animal fit for market.

Mr. MCILWRAITH: In our district, at Milngavie, a farmer thought he would like his stock tested to see if there was anything particularly wrong with them. He got a Glasgow veterinary surgeon to put them under test, and there were two that had been failing for a considerable time before being put under the test, and both responded to tuberculin. Well, to satisfy his own curiosity he sent them to the dead meat market in Glasgow to have them killed. Though both responded to the tuberculin test, there was no tuberculosis found on *post-mortem*.

Professor DEWAR: I have listened with interest to the discussion on tuberculin, and its use as a diagnostic agent. I would first apologise to the Secretary for saying that there was carbolic acid in tuberculin. Tuberculin is not a fixed quantity. It is an organic product, and you may get two samples of tuberculin which are certainly not of the same efficiency. You must be careful to get it from a reliable source, such as the British Institute of Preventive Medicine or the Pasteur Institute. You know, all of you, that things are made to sell, and you see tuberculin advertised by a considerable number of firms which sell chemicals, and we have no means of knowing where it is obtained and how it is prepared, and they won't take any responsibility for anything that may occur through the use of their tuberculin. Always remember that though you have two samples, you cannot be sure they are of the same strength. As to its curative agency, I have had a good deal of experience, and I do not think there is any beneficial effect as far as its curative use is concerned. I have had animals tested and tested, that ultimately did not react to tuberculin, but I don't ascribe the cure of the tuberculosis to the use of the tuberculin. An animal may be left to spend its natural life and she may be affected for some years and years and go on breeding and milking and she may ultimately come to the slaughterhouse in the end a good carcase, yet the subject of tuberculosis. I have a great deal of faith in tuberculin as a diagnostic agent. On one occasion I made a *post-mortem* examination of an animal that reacted to the tuberculin test, and saw no tubercular lesions, but I have so much faith in it that I believe the animal was affected, and it was through my fault in not making a minute examination that I did not discover it. It is a fact that an animal may become affected by contagion. Take a case where you have two cows, a healthy animal placed beside a diseased one; some day this animal will be affected by contagion with tuberculosis. It may be weeks, it may be months, it must take some time to develop; but, given this time, it is quite possible that this cow may react and yet no one would be able to discover it. I have gone in at the request of a client and tested a byre of cows. On one occasion there was only one animal in the byre that did not react. I may tell you that these cows were as healthy in appearance as you could wish. I could not pick out one as suspected. I learned that the one which did not react had been a newly-bought cow, and I have not the least doubt that after six months she would have reacted like the rest.

Another thing I would like to call attention to. Apart from tuberculin altogether, I am perfectly certain that animals do recover from tuberculosis. You will never remove lesions, but the animals are, properly speaking, healthy. Just like an individual getting a finger amputated, the animals are minus something or other, but there is no tuberculosis in the system.

The PRESIDENT: Is there nothing we can do to assist in bringing before the meeting of the Board of Agriculture the necessity for taking measures for the compulsory use of mallein in suspected cases of glanders, when the disease appears in a stud of horses? Not only the compulsory use of it, but that compensation should be given to the owners when the horses are slaughtered, having reacted to the mallein test. That is a point which is of great importance. Animals showing no clinical lesions are allowed to go about their regular work, and until they show some visible clinical symptoms which enable us, as inspectors, to say definitely, "That is an affected animal," we cannot take upon ourselves the risk of condemning the animal and compelling the owner to slaughter it, and consequently these animals are a source of danger to healthy stock with which they may come into contact. It seems to me a suggestion that might be put forward, if the members of this meeting are satisfied that mallein is a reliable diagnostic agent for glanders, and that

it takes this form:—" That the Glasgow ——, recognising the value of mal lein as a diagnostic agent in suspected animals," etc.

Seconded by Mr. ANDERSON.

Mr. PEDDIE: I had a case of glanders three months ago, which turned out to be very bad. There were other three horses in the stables. I tried the mallein test, and the animul reacted. I reported it to Professr McCall. He and I met, and he looked at the horse and thought him thoroughly healthy. There were no visible signs whatever. I advised the man to get rid of it, and it was killed and found to be bad. The temperature rose to about 105°, and on the neck there was a marked swelling nearly a foot in length.

Mr. ANDERSON: I would like to ask some of the members who have tested more than I have the size and extent of the lesions at the point of inoculation. One case I had where it extended from the neck down to the knee. In other cases it has been only the size of an apple; but in the former case it extended right down the forearm to the knee. I never saw such a big swelling caused by anything else before. It did not suppurate.

The PRESIDENT: I believe that the presence or absence of suppuration in the swelling caused by the inoculation depends on whether the syringe used has been thoroughly antiseptic.

Votes of thanks to the CHAIRMAN, Professor DEWAR, and visitors brought the Meeting to a close.

HUGH BEGG,
Hon. Sec. and Treasurer.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE Eighth Annual Meeting of this Association was held in the North Eastern Hotel, Darlington, on Friday, September 4th, 1896.

Mr. Percival Snaith, Bishop Auckland, presided. There were also present Messrs. H. H. Roberts, Bishop Auckland; A. Peele, West Hartlepool; H. Peele, Durham; C. G. Hill and J. H. Taylor, Darlington; J. Smith, Stokesley; J. Wilson, Eaglescliffe; G. R. Dudgeon, Sunderland; Geo. Elphick, Newcastle-on-Tyne; Professor Dewar, Edinburgh; Dr. Hern, Darlington; D. Barningham (veterinary student) and W. Awde, Stockton-on-Tees.

Apologies for non-attendance were received from several gentlemen, including telegrams from Mr. J. W. T. Moore, Jarrow-on-Tyne and Mr. S. E. Morton, North Ormesby.

The minutes of the previous meeting were taken as read and confirmed, proposed by Mr. A. PEELE, seconded by Mr. H. PEELE, and carried unanimously.

Mr. J. H. Taylor submitted a very interesting specimen of fractured shoulder-joint from a twelve-months-old filly. When first called in, no fracture was suspected and it was treated with fomentations and lotions. When the swelling had somewhat subsided, fracture of the neck of the scapula was diagnosed and the animal placed in slings for a while. Subsequently, was turned out to grass in the hope that she might be useful for breeding purposes. However, she got down in a ditch, displaced the bones, and was ultimately destroyed. A new joint had been partially formed in the reparative process which was being carried on.

The SECRETARY mentioned the case of a foal which had been injured about three weeks before in haltering, after which it was much swollen under the parotid gland on either side of the neck. As several cases of strangles had occurred it was decided after two or three days to explore, but on attempting to open same it was found to contain blood. A stimulating

liniment was then applied to the skin and the enlargement gradually disappeared, the only symptom noticeable being stiffness of the neck when it was being turned. On the day ofthe meeting, however, was called again and found the animal dead on arrival, and blood issuing from the nostrils, with bulging of the parotid glands as before, only more tense. On opening same the space contained nothing but clotted blood, no doubt from rupture of the jugular vein. In the centre, however, there was a small white clot, evidently the remains of the previous injury.

Mr. ROBERTS (Treasurer), submitted his annual report which showed, after the payment of some small accounts, a balance in hand of £17 1s. 2d. There were also outstanding subscriptions due to the Association, £8 18s. 6d., which was not considered very satisfactory.

Mr. H. PEELE moved the adoption of the treasurer's report and the payment of outstanding accounts. Seconded by Mr. TAYLOR, and carried.

The SECRETARY reported the receipt of a letter from the Southern Counties Veterinary Medical Association, enclosing a resolution on the subject of the exemption of veterinary surgeons serving on juries, and the question of fees when giving evidence in criminal cases.

The CHAIRMAN said the subjects mentioned were very much desired reforms, if they could in some way bring them about.

The SECRETARY said the only way of obtaining the desiderata was by obtaining a new clause in the charter, and the Council of the Association seemed to taboo that idea on account of the great expense that would be necessary.

Mr. ROBERTS said a great bungle had been made when the last charter was got, although an attempt was made to obtain those rights. There was no reason for chemists being exempt from serving on juries, and veterinary surgeons not being exempt. The question of fees, he thought ,was in their own hands.

Mr. SNAITH then vacated the chair and a hearty vote of thanks was accorded him, on the proposition of Mr. AWDE, seconded by Mr. A. PEELE, to which the retiring president suitably responded.

Mr. H. H. ROBERTS having taken the chair, then read his inaugural address:—

Gentlemen,—I must first thank you for the honour that you have conferred on me in placing me in the presidential chair for the ensuing year, and I hope the same support will be accorded to me during my period of office as has been to my predecessors, and that we shall continue to extend the same courtesy and good feeling to one another which has hitherto marked all the discussions entered into by this Association, and if these cordial relations continue to exist between us, which I have every reason to expect they will, it will render my period of office an easy and pleasant task. Now, gentlemen, I propose to touch briefly on one or two subjects which have been occupying the minds of the profession of late. The first question on which I want to deal is that of the matriculation examination. The last election was fought on this matter, and we spoke out very plainly that we were in favour of the higher standard of education, which, in my opinion, was perfectly right, as from the institution of this examination we must date the commencement of our recognition as an educated and scientific body, for no doubt the veterinary surgeon, prior to the introduction of this examination, was a very different individual to the veterinary surgeon of to-day, and I say that education undoubtedly is the cause of this satisfactory result, and has given us our place in the scientific world.

The treatment of us by the Board of Agriculture has been the cause of a considerable amount of friction, but the intervention of the Council, through the President, has considerably improved matters, for which our best thanks

are due to Mr. J. F. Simpson and Mr. Long, but much still remains to be done, so that the management and control of contagious diseases shall be placed in the hands of men best qualified to deal with them, as it appears to me at the present time it is partly entrusted to men whose greatest qualification is to know nothing about animals or the suppression of their diseases. How it is that travelling inspectors are appointed without any guarantee as to their fitness for the office is beyond my comprehension, as all other branches of the Civil Service have to be entered by a severe and competitive examination.

The prohibition of the importation of Canadian cattle (except for immediate slaughter at the port of landing) must be a great benefit to the British agriculturist, as it will prove in the long run an advantage to the Canadian farmer, for in the first instance it will check any outbreak of pleuro-pneumonia amongst our herds at home, and in the second instance it will incite the Canadian Government to stamp out the disease there in the hope of us again opening our ports to them for store cattle.

With regard to tuberculosis, the sooner the Board take the matter up and it becomes a scheduled disease, the better it will be for the consumers of meat and milk; more especially the latter, for the consumers of milk have no opportunity of judging as to the condition of the udder from which the fluid is derived, and we all know how deleterious this is to weakly adults and children. Many difficulties will present themselves in dealing with this matter, one source of the infection of cattle with tuberculosis, which up to the present has not been taken any notice of. I refer to the attendance on cows of persons suffering from phthisis. This was stated by a medical man, at the meeting of the British Medical Association, held at Carlisle, to be a probable source of the infection of cows with this malady; and, in my opinion, there is something in it. This only shows how strict the regulations will have to be if this matter is to be dealt with with any success. On the other hand, we are in a better position to deal with this malady than formerly. By the use of tuberculin, we are now enabled to lay our hands on the most dangerous source of the disease. I refer to the apparently healthy animal which, prior to the introduction of tuberculin, it was practically impossible to diagnose. So this, the greatest difficulty, is to a great extent overcome, and only requires enforcing with a strong hand to ensure its success.

The present system of the inspection of meat is in a most unsatisfactory condition, and until private slaughter-houses are abolished, the duties of the inspector can only be carried out in a very incomplete manner, and, added to this, the incompetency of the majority of men fulfilling this office, renders matters considerably worse, and unless other towns follow the lead of Manchester, where only properly qualified men are employed as inspectors, and the army of gasfitters, plumbers, and broken-down butchers, etc., is disbanded, we cannot look for the proper protection of the public health. The question of cruelty to animals is a subject which cannot fail to interest us all, and, gentlemen, it is always painful for me to read the newspaper reports of cases where one veterinary surgeon says it is cruelty, and another says distinctly opposite. Now, there should be no two opinions amongst veterinary surgeons as to what is cruelty; but the crucial point is, how far it is justifiable. In the course of our daily practice we, undoubtedly, have to subject animals to pain, and it certainly behoves us all to minimise it as much as possible. But it is high time that something was done to prevent veterinary surgeons being hauled up in the police court for causing pain in the legitimate practice of their profession, which undoubtedly is conducive to the ultimate recovery of the animal. With regard to the prosecution of others than veterinary surgeons, more especially the poor man who is deriving his livelihood from a single horse, when summoned by an inspector,

who, ignoring the veterinary surgeon, acts on his own responsibility, brings the man before the bench, and puts him to considerable expense in obtaining legal and scientific aid, and we all know how much chance he will have in getting clear of conviction without it, the case is clearly proved that no cruelty existed, and the inspector in the wrong, the defendant in 19 cases out of 20 has all the costs to bear. Now, gentlemen, this is a monstrous injustice that a man should be put to the inconvenience, loss of time and money, to say nothing of the ignominy of being put in the position which, if the case is proved against him, renders him liable to a term of imprisonment. Can nothing be done to remedy this evil? On the other hand, the Society for the Prevention of Cruelty to Animals has undoubtedly been the means of checking a great deal of unnecessary cruelty, and the work, where they have competent inspectors, is not only well carried out, but receives the hearty co-operation of all members of the veterinary profession.

In conclusion, I wish to draw your attention to the great loss sustained by the farmers of South Yorkshire and Lincolnshire last autumn through the supposed new disease, known as the Lincoln Lamb Disease. The local experts seemed to be quite unable to cope with it, and the assistance of some of the Professors from London was called in. The opinion expressed by them on the *post-mortems* (which were probably on lambs which had not died from the real disease) was of a parasitic nature, due to the *Strongylus Filaria.* Now, in my opinion, the loss sustained was, in all probability, due to two causes. The first and minor cause I put down as the one above mentioned. We now come to what I consider the real disease, by which the great loss was sustained. The history of the disease is as follows:—The flock has been folded on turnips about ten days or a fortnight; the shepherd walks through them in the morning and finds them, as far as it is possible to judge, all in perfect health. On visiting them again, in about two or three hours' time, he probably finds one or more of the best hogs laid on their sides, in a comatose condition, death resulting before any assistance can be rendered, and which, in my opinion, would be of no use if it were at hand, this going on until from 20 to 35 per cent. of the best lambs have died. My reason for mentioning this matter is that I have twice been called in to investigate outbreaks presenting exactly the same symptoms. The great difficulty to contend with was that the *post- mortem* lesions were practically nil, therefore throwing no light on the matter whatever. I am not prepared, at the present moment, to express a positive opinion as to the actual cause of the outbreak; but what I can do is to positively assert that after my being called in there was not another case; and, gentlemen, the only remedy that I adopted was to thoroughly clean the turnips, being careful to remove any abnormal growth, as well as having the tops taken off, so, practically, not making any material change in the feeding of the animals, but being certain that their food was clear of any fungoid or noxious matter. The striking similarity between this Lincolnshire lamb disease and the outbreaks which were brought under my notice (especially as my treatment proved so effective) I thought it worth giving publicity to. Should this disease be the same as I was called on to investigate I see no reason why the same treatment should not prove effective in checking it, should it again make its appearance this autumn.

The SECRETARY nominated Mr. John Wilson, M.R.C.V.S., Eaglescliffe, for membership, seconded by Mr. PEELE.

Mr. HILL nominated Dr. Hern as an Honorary Associate, seconded by Mr. AWDE.

A vote of thanks was proposed to Mr. Roberts for his address, by the SECRETARY, and seconded by Mr. HILL.

Professor DEWAR then read his paper on "The Influence of Heredity in Disease":—

In thinking of a subject that might prove interesting to busy practitioners, the subject of heredity and the influence it has in disease occurred to me as deserving some consideration.

At the present time heredity as a predisposing cause of disease is not so generally accepted as it was some years ago. We are all getting so learned, so scientific, so sceptical of accepting as fact anything that is not capable of absolute proof. Instead of looking on heredity as an important ætiological factor in disease, it is looked on by many as a convenient term to use in getting out of a difficulty without having to acknowledge our ignorance. Our modern scientific man expects a positive demonstration before he will accept an alleged cause for a disease. So many diseases have in recent years been found to be due to microbes that a specific definite cause is now naturally looked for. It cannot satisfy an inquiring mind to be told that a disease is due to the east wind, or to a sudden change in the barometer. Something definite is required, and the search for micro-organisms is being prosecuted all over the scientific world with even more assiduity than ever.

Notwithstanding all this, I am firmly convinced that heredity frequently exercises a powerful influence in the causation of disease.

Then what is "heredity"? It is difficult to give a strictly accurate definition of the word, and perhaps no two writers on the subject are altogether in agreement regarding it. But generally speaking it is understood as "that property by which qualities and characteristics are transmitted from parent to offspring." How or why they are transmitted it is beyond the scope of this paper to inquire. But I am tempted to say that we do not know.

Darwin's theory of "pangenesis," and Weismann's theory of "the continuity of the germ plasm," and all other theories are little more than plausible hypotheses,—a begging of the whole question. It is simply a natural law that "like begets like" as a general rule. This we know from observation and experience. How it is we can tell as little as we can why the union of two given animal cells should develop into a sheep, while other two apparently similar cells become developed into a goat—except that they develop in the likeness of their progenitors.

That "like begets like" generation after generation down through the ages, is a truism that no one disputes. Yet the whole theory of evolution is built upon the fact that change does occur. It certainly occurs slowly, and may take cycles of ages before a distinct alteration becomes permanent in one of the higher species. But through the mixing of the materials in the union of the sperm-cell and the germ-cell, through association or environment, through natural selection or the survival of the fittest, animal organisms become materially modified. Had this not been the case the efforts of agriculturists to improve the breeds of our domestic animals would have been almost hopeless. Our Bakewells, our Collings, and our Cruickshanks would have struggled much less successfully to make our sheep and cattle more useful and more profitable than they have done.

Upon this same aphorism, "like begets like," are founded all our stud and herd books. It is that and that alone which gives value to pedigree, and the longer continued the series of progenitors of the same type, the more certain is the offspring to adhere to that type. This is a well-recognised fact, and I have seen it given too much consideration. I remember a shorthorn breeder showing me a cow he had recently bought at nearly three figures, and his reason for buying her was because she was full sister to a particularly fine cow that had been sold for nearly 600 guineas. He held that having exactly the same pedigree she was likely to breed nearly as well as her sister. Alas! she was never worth anything, and before that time had, I believe, the germs of tuberculosis in her system.

On the other hand, I remember a bull, a most magnificent animal, that had

taken first prizes at the Royal English and the Highland Society's shows, which was used in a herd that has since become of world-wide celebrity. His services as a sire were a failure. He was not an impressive progenitor. But at the same time there was being used in that herd a bull that need not have shown his nose inside a show-ring; yet he did more to improve and render that herd famous than all the bulls that had been used in it up to that time. I remember remarking about the comparative failure of the prize bull, whose portrait adorned the Shorthorn Herd-book, to an experienced breeder. He did not express any surprise, and said, "Well, you see he was only a chance beast." He meant that the bull was very much better than his pedigree. He was, to some extent, in the animal kingdom what an arboriculturist or botanist would call "a sport" in the vegetable.

This brings us to another part of our subject, *i.e*, the transmission of acquired characters. Few naturalists will admit, or but to a very limited extent, a belief in the hereditary transmission of acquired characters. Yet a belief in the theory of evolution necessitates a belief in the hereditary transmission of alterations, of developments, or of adaptations in the organism. As Lamarck was undoubtedly wrong in his view that all acquired characters are transmitted, so I consider is Weismann wrong in holding that they are never transmitted. I cannot conceive how our monodactylous horse could have been evolved from his polydactylous progenitor of ages ago, according to the latter theory. The germ-plasma—the reproductive cells—are much more protected, are less exposed to external influences than the somatic cells generally, and ought, therefore, to be less liable to change. In the breeding of our domestic animals we see how difficult it is to maintain a high standard of excellence; and in animals that are unusually large or unusually small how there is always a tendency in the offspring to return towards the average of the species. We can easily understand, therefore, how the offspring should represent, not necessarily the mean, but any stage, as it were, of the swing of the pendulum between the two extremes, in this case the sperm-cell and the germ-cell. Outside that it is difficult to understand how anything could be represented apart from external influences, apart from the inheritance of acquired characters. According to Weismann's theory, if carried to its logical conclusion, there would be no variation, no evolution, but adherence to a type the slight differences of which would become less and less with the intermingling of the germ-plasma of the sexes until a continuous and unbroken means was established. Those who oppose Lamarck's views say that, although we go on docking our horses generation after generation, Nature does not take the hint and save us the trouble by failing to produce the tails. Certainly not. We need not expect species to become modified at that rate. Because a few naturalists have endeavoured to modify species, to obtain the transmission of acquired characters for, it may be, a few consecutive years, and have generally failed, their brief records being infinitely too short, are we to refuse to accept the records handed down to us in the geological periods through countless ages? No. The latter testimony cannot be refused. The life of a single naturalist is but as nothing compared to the time taken for the evolution of the modern horse. And it need not be expected that a distinct species can be permanently altered or modified in the course of a few years. The older the type, the longer a character is transmitted, the more generations it has passed through, the less liable it is to variation or reversion, and the more permanent is it likely to be. In the case of the horse, the type of which has been very slowly evolved, the tendency to atavism or reversion is but rarely manifested.

(To be continued.)

THE OPENING OF THE ROYAL (DICK) VETERINARY COLLEGE EDINBURGH.

THE Forty-seventh Session was commenced on Tuesday, 6th October. The LORD PROVOST presided, and expressed the pleasure it gave him to be present and give the countenance of the Corporation to the College at the opening of another session. During the year several improvements had been introduced in the management of the College. The Corporation were reasonably well pleased with the new arrangement, and they congratulated the students and Principal Dewar on the results of last year's work. Veterinary science was coming more into prominence every day, and promised to take a very honourable position, because the teaching the students were to receive would enable them to a very large extent to take the place of the ordinary medical practitioner. Their education, and their profession afterwards, would go a very long way to improve the health and surroundings ef the people, not only in large cities but in the country districts. One of the most important things in their food supply was to secure healthy meat, and the Corporation had not been slow to take up that question, and to secure properly qualified veterinary men to look after that department. They looked to the veterinary profession to see that they did not eat anything—and, as far as possible, did not drink anything—that was likely to injure public health. It was not so long ago, during his public life, that they were content if they had in Edinburgh a death-rate of about 27 per 1,000, but now they did not like to see it above 16 per 1,000, That great change was due to the improved condition of the people, and in maintaining that improvement the veterinary profession could render valuable assistance.

Mr. FINLAY DUNN, F.R.C.V.S., delivered the introductory lecture of the session, in which he indicated the wide domain which the veterinary profession covered, its scientific and practical aspects, and the great advance it had made in recent years. Although it was said that the profession was over-crowded, and that the number of practitioners in various towns and districts had increased five-fold, the number and value of domestic animals had also increased, and the scope, usefulness, and repute of the profession were steadily extending, while fresh fields were being opened up for them both at home and abroad. The recent Act of Parliament, prohibiting the importation of live animals from abroad would considerably stimulate the breeding of cattle at home, and the demand for veterinary services would thus be increased. Having dealt at length with a variety of stock diseases and their treatment, he said that since veterinary science received its charter in 1844, the general management of domestic animals had been greatly improved, diseases were better treated, the period of convalescence was shorter, and the mortality was lower. They had in recent years been able to stamp out pleuro-pneumonia and foot-and-mouth disease, and with the protective measures that had been taken they were not likely to be reintroduced. No such success had crowned the five years' endeavours of the Board of Agriculture to eradicate swine fever. Notwithstanding the expenditure of about £165,000 per annum in repressive measures, that contagious fever continued to extend. But failure sometimes taught salutary lessons as well as success, and humiliated by their want of success, the Board of Agriculture had amended their methods, and the local veterinarians, summoned to determine whether pigs had swine fever, had now a free hand in dealing with outbreaks, with the result that the disease had already become less prevalent. That experience was a testimony to the practical value of sound veterinary knowledge in dealing with the diseases of animals. In no other department could this age of nnexampled progress match the triumphs of bacteriology, and although there was still a good deal

to learn concerning some of these bacterial diseases, the knowledge of their treatment was very much greater than it was thirty years ago.

On the motion of Professor METTAM, a cordial vote of thanks was passed to Mr. FINLAY DUN for his address, and the Lord Provost and Corporation were also thanked for their warm interest in the College.

THE GLASGOW VETERINARY COLLEGE.

Opening Address.

THE opening address of the winter session in connection with the Glasgow Veterinary College was delivered on Friday October 23rd, by Dr. R Cowan Lees, Glasgow, in the college, Buccleuch Street, the subject being "Recent Advances in Medicine." Councillor Brechin presided.

The CHAIRMAN, in the course of his remarks, referred to the important work in which Principal M'Call is engaged, and the eminent position he occupies in the veterinary world. He also pointed out that there was a great future for veterinary surgeons, and remarked that much might be done that had not been done to stamp out disease.

Dr. COWAN LEES, in his address, dealt with the advancements in medicine and general pathology which have been directed mainly by the study of contagious or infectious diseases. He said they were all bacteriologists nowadays, but it was only within very recent years that the discovery had been made that by far the larger portion of the diseases of men and animals is due to the intrusion into the body of a living organism. Interesting observations and experiments were made long ago which resulted in unspeakable good to the human race; but the true meaning of these observations and experiments scientists entirely failed to grasp until very recently, as, for example, the discovery of the value of the inoculation of the smallpox virus, a knowledge of which was brought to this country by Lady Mary Montagu, and thereafter the discovery of the value of vaccination by Dr. Edward Jenner, discoveries which, while of great practical usefulness, only had become intelligible by the researches of Pasteur—recently dead—Koch, Lister, and other bacteriologists now living. Proceeding to detail the work of Pasteur and Koch, he said that many of them would remember the commotion which was excited in this country upon the news that Koch had secured a perfect antidote against all forms of tuberculosis by the simple hypodermic injection of a fluid which he called tuberculin. Though the first hopes of tuberculin were sadly dashed, yet they must not forget that Koch set a going a new thought in scientific medicine, and that he began a new era which, even in a short space of time, had been productive of the greatest good in other diseases—such as diphtheria and tetanus. Tuberculin was not a remedy in tuberculosis, but was simply a test which had been of the greatest use to veterinary surgeons, especially in proving or disproving whether an animal was tubercular. He spoke of his visit to Garches Farm, near Paris, where he inspected the methods adopted by Dr. Roux in immunising horses for the purpose of securing diphtheritic antitoxin. He showed that all antitoxins could not be produced on the same lines as those adopted for the production of antitoxin used in the treatment of diphtheria. The lecturer also explained that Principal M'Call and himself had carried through a number of experiments in Glasgow, by which they proved that a horse could not be immunised on the same lines by a different bacillus than that of diphtheria. Dr. Lees then raised the point of preparing a serum or antitoxin which would be antagonistic to that of tuberculosis and glanders, and said he hoped that in his future experiments he would be able to secure such a serum, because he was confident that so far as a cure was concerned an antitoxin prepared

from the bacillus of tuberculosis such as Koch's tuberculin could never act as a curative agent in cases of consumption. Referring to Lister's work, he remarked that perhaps sufficient attention had not been devoted to chemical bactericides. Carbolic acid as an all-round antiseptic for ordinary surgical dressings may not be surpassed, but there was no questioning the fact that what will destroy one kind of bacillus will not so easily destroy another. In conclusion, he referred to the position of the veterinary surgeon, which, he said, was becoming of more importance every year. The profession was peculiarly adapted to aid in many ways those researches to which able men were now devoting so much time. The important services now rendered to the community by the meat inspector were no doubt ably executed, but he had always been under the impression that such a post should be filled by a thoroughly competent veterinary surgeon, or, at least, that it should be under the supervision of one. When they turned attention to the subject of milk, which played such an important part in the feeding of infants, in cities especially, did it not strike even the lay mind what a great necessity there was for stricter inspection being made of all cows which supply that nutrient and necessary fluid? He trusted that the proper authorities would appoint proper veterinary inspectors, who should have power to order the slaughter of all infected cows, and thus remove one of the greatest causes of tubercular infection to the human race.

Principal M'Call afterwards presented the prizes won during the last session.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION

A MEETING was held at the Royal Hotel, Southampton, on Thursday, September 24th, under the presidency of Mr. J. T. King. There were present:—Messrs. J. F. Simpson; J. W. Barford, Southampton; J. B. Tutt, Winchester; C. Pack, hon. sec., Lymington; E. Whitley Baker, Wimborne; C. Carter, Guildford; H. Hall, Southampton; and W. J. Browning, a visitor.

Congratulations to Her Majesty.

The PRESIDENT said before the business proper was commenced, there was one important duty for them to fulfil, which was to send a telegram from that Association to their Sovereign. He thought as veterinary surgeons and loyal Englishmen they should do so. They met together in small numbers, but he was sure in such an action they would be expressing the general wishes of their professional brethren in the Southern Counties. He was sure there would not be a dissentient voice to sending a telegram congratulating Her Majesty on her unprecedented reign over them, and, at the same time, expressing the hope she might be long spared to continue that reign over that wonderful nation and land. It was then decided to forward the following: "That this meeting of veterinary surgeons begs to offer its loyal congratulations to Her Most Gracious Majesty the Queen on having attained a period of reign exceeding that of any of her predecessors in this our beloved country, and hope she may be long spared to reign over us." The resolution duly signed by the President was forwarded to Her Majesty at Balmoral.

Mr. BARFORD, on behalf of Mrs. Barford and himself thanked the Association for the kind vote of condolence forwarded them during their affliction.

Exemption from Juries, and Fees.

On the minutes (which included resolutions on the above) being read,

Mr. SIMPSON said it was worthy of note that in the reports of the various Associations issued since the last meeting it appeared that those Associations

were of the same opinion as themselves with respect to their exemption from jury service. He had had no opportunity of fulfilling the promise he made at the last meeting to bring the matter officially before the Royal College, owing to their not having been a meeting since. A meeting would be held on October 17th, when the resolution passed by that and other associations would be laid before the Council, who might refer it to a committee to ascertain what course to adopt.

The SECRETARY stated a circular letter was drawn up by the President and himself and sent to the various associations. The Secretary of the Royal College had acknowledged receipt of a copy, and said it should be laid before the Council.

Mr. SIMPSON said he thought pressure should be brought to bear on those gentlemen who promised to take the matter up, asking them to fulfil their promise.

The SECRETARY said he had heard from the Secretary of the Yorkshire Association, stating the letter had been considered, and it was unanimously resolved to support the views of the Southern Counties Association on the matter. Professor Macqueen wrote, stating the matter was laid before the Council of the N.V.A., but no action was taken in the matter. The Lancashire Association was unanimously agreed to bring the matter forward with a view to discuss and support the same. The Secretary of the Central Society wrote stating that he would bring the matter before their Council. He regretted the session had just been completed, but deemed the matter so important as to at once move in the matter and do what lay in his power to assist the Southern Counties in what he considered a question of vital importance. The Secretary of the Royal Counties wrote stating the Society unanimously resolved to take similar steps as the Southern Counties.

The PRESIDENT said from the replies read it was evident the question had been well received.

Apologies.

Apologies for unavoidable absence were received from Sir Henry Simpson, Professor Pritchard, Messrs. T. B. Goodall, Wheatley, and J. Burden.

A paper was here read by J. B. Tutt, M.R.C.V.S., on "Vomition in the Horse," as follows:—

My reasons for bringing the subject "Vomition in the Horse" before you, are to hear your opinions upon, perhaps, the highly controversial question as to whether it is a symptom solely of a rupture of one of the coats of the stomach, and, if so, whether vomiting takes place anterior to the rupture of the muscular coat of that organ. Further, to ask if any of you recognise a condition unassociated with rupture, but accompanied by persistent vomiting, which I shall presently describe. And, lastly, I think the subject bodes well for a good discussion which, allow me to say, is the chief object of this paper.

What is vomition? It is an involuntary act by which some of the contents of the stomach—chiefly the fluid portion—are expelled from the stomach into the œsophagus and nasal chambers and out at the nostrils of the horse.

Let us glance briefly at the anatomical structure of the stomach. It is composed chiefly of two coats, an external muscular—whose fibres are arranged in three different directions, longitudinal, circular, and oblique—and an internal mucous coat, which is divided into the cardiac and pyloric portions. The cardiac portion is simply an extension of the mucous membrane of œsophagus and is in such quantity that when the stomach is empty the mouth of the œsophagus is closed by it. To this latter anatomical condition the inability of the horse to vomit, except under grave conditions, such as rupture of the stomach walls, is supposed to be chiefly due.

The anatomical relations and position of the stomach of the horse show marked difference from that of the dog, an animal in which vomition takes place with the greatest ease, The stomach of the horse is, as it were, slung transversely in the abdominal cavity; it is far removed from the abdominal muscles, it is not held firmly to the diaphragm by the œsophagus which enters, too, not at its cardiac extremity, but near to the centre of the lesser curvature. The pylorus is of large dimensions and admits of food being easily passed on; its mouth, too, is guarded by a powerful sphincter. The œsophageal, on the contrary, is small, so also is the channel of the œsophagus throughout; its wall are thick. Compare all this with the stomach of the dog. It is a simple bag as it were, directly in contact with the abdominal muscles; it is held firmly to the diaphragm by its œsophagus, whose opening is large and funnel-shaped, whose walls are thin, and whose channel is wide throughout, and which enters the stomach at the extreme end of the cardiac portion, far removed from the pylorus situated at the exreme right extremity, whose opening is small.

I shall now ask you for one moment to consider the food of these two different animals. In the horse we have food composed of grain, chaff, hay, and so on, impregnated with water, which is certainly the worst kind of food to form a bolus to be expelled; especially so when we bear in mind the above anatomical conditions; the consequence being as I have noted in my definition that the pressure upon the contents of the stomach during the act of vomition expels chiefly the fluid matter contained therein. In the dog we have flesh, usually swallowed in large masses, we have a stomach that can be subjected to pressure all round, and what with its small pyloric opening, its large and funnel-shaped cardiac opening, its large œsophageal canal sloping in a direction towards the mouth during the act of vomition, by the position the animal affects, we have the best possible conditions, both as regards food and anatomical structure and position for the ready ejection of the contents of the stomach.

What causes vomition in the horse? Can nauseous medicines produce it? I think not. But I consider the sole cause is irritation of the mucous membrane of the stomach or œsophagus, perhaps both, produced by unsuitable food, irritant poisons, or rupture of the mucous membrane of the stomach. In the former condition I regard it as important but not serious. In the two latter I regard it as serious, in fact as a fatal condition.

Taking first the important but non-fatal condition. As a general rule, one receives a message to attend a horse that is frothing at the mouth and vomiting through the nostrils. Upon enquiry you find the horse has just come off a laborious journey and has received little or no food until its arrival home, when it received the least suitable food for such a condition, such as grass, potatoes, rye, and clover—I am stating here exactly what I have found in practice. You find your patient with head hung down, froth hanging from its mouth, with a goodly quantity upon the ground or in the manger in front of him, sweaty patches upon the body, distressed breathing, the nostrils being usually widely dilated, visible mucous membranes injected, a temperature of 102, rarely exceeding 102½; a pulse small and about 60 or 70. Before, however, you have time to record the above symptoms, your patient arches his neck, crops his ears, depresses the nose, and vomits from both nostrils. If you are sceptical as to whether this stringy mucous accompanied by a little food last partaken of, is from the stomach, get on the left side of him and see the vomit travel up the œsophagus, or give him his drench, wait a few seconds, and see some of it return. In one instance I noted a most peculiar emphysematous condition extending from the chest up the course of the œsophagus, which crepitated—as with black quarter. In this case he had returned from a long journey, was fed on potatoes, and was taken ill

rapidly after. In a case that happened only last week, the pony had been sharply driven, and upon arrival home was turned out in a meadow to eat the rapidly-grown young grass; in a short time he was in a condition as above described, vomiting stringy mucus and grass. He made a rapid recovery. It is quite possible an animal might have a naturally weak stomach, and might be more readily affected than others; but I cannot admit for a moment that in all the cases I have had this predisposed condition existed. I only look upon one out of the many as of the above class, and he has suffered three times during the year. Long journeys, then, coupled with improper food, I consider to be the cause of irritation to the mucous membrane, producing gastric catarrh. Irritant poisons or rupture of the mucous membrane of the stomach, produces acute inflammation of this membrane.

What is the character of the vomit? It is of a watery nature having a peculiar acid smell, accompanied by small quantities of the solid parts of food. Compare this with the stringy mucus noted in the last condition. The other symptoms are an expression about the face painful to notice, distressed breathing, profuse cold sweats, acute pain, tucked up condition of abdomen, deeply injected visible mucous membranes, the very small and rapid pulse, are the chief fatal symptoms, which I regret to say I have noted far too many times. Irritant poisons are either administered accidentally or intentionally, or by the ever-wise horsekeeper who, as is well known, often gives arsenic to improve the coat.

How is rupture produced? By the tympanitic condition of the stomach followed by the animal falling violently down in his box. On making *post-mortems* upon horses dead of the bowel complaint I have often been struck by the tympanitic condition of the stomach, although there has been a comparative absence of tympany in the bowels. Add to this the violent concussion produced by the animal throwing himself down, aud I think we have a condition more than sufficient to account for the rent. I am qulte willing to admit that in some cases of rupture we might have structural disease of the stomach, but in the vast majority of cases we have nothing of the kind.

Is vomition prior to the rupture? This depends upon the coat affected. If there be a rent in the muscular coat I regard vomition as impossible, whereas a rent in the mucous membrane would be more than sufficient to account for the vomiting—you would have in fact an acute gastritis.

I will here shortly record a case of arsenical poisoning which occurred in my practice not many months ago. Upon arrival at the farm I found the horse in a very bad state indeed, it was a case of acute gastritis producing persistent vomiting for several hours, this ceased however some hours before death, which took place some 30 hours after the attack. Upon making a *post-mortem* I found the stomach ruptured—both coats. Can it be contended for one moment that the muscular coat contained a rent whilst this persistent vomiting was going on? I think not. To what then do I attribute the admitted difficulty of vomiting, aud how is vomition accomplished in the horse? The difficulty exists from the small and thick-walled œsophagus, the perpendicular manner in which it falls as it were from the right pillar of the diaphragm, entering the stomach not at its left extremity, but near its middle, the opening, too, being small and constricted, and the fact that it is impossible for the animal to get these parts into such a position as to admit of free vomition. How very different is this to the dog.

As to the condition of the mucous membrane at opening of œsophagus, I attach but little importance to this coudition as far as vomition is concerned, from the fact that if the stomach is the seat of injury or disease it is either distended by food or by gas, and under such conditions the mucous membrane is removed by the distension from the œsopha-

geal opening. Vomition being accomplished by the contraction of the longitudinal fibres which dilates the œsophageal opening, assisted internally by gas or food, by pressure exerted upon the contents of the stomach, by its circular muscular fibres, its patent pyloric valve, by the downward movement of the diaphragm, the pressure of the bowels upon the stomach, by contraction of the abdominal muscles and by the eructation of gas. In an animal I had with rupture of stomach in August last, and which vomited some few times before death, it was noticed that for some time between each act of vomiting gas would travel up the œsophagus and distend that channel, followed later by eructation and vomit.

(*To be continued.*)

CONTAGIOUS DISEASES ANIMALS ACT, 1894.

SUMMARY OF RETURNS OF OUTBREAKS, for the four weeks ending October 17th, 1896.

ENGLAND AND WALES.

Pleuro-Pneumonia.	Swine Fever.	Glanders (including Farcy).	Rabies.	Anthrax.	——
None	Outbreaks confirmed 293 Swine slaughtered 5,499	Outbreaks reported 84 Animals attacked 123	Cases reported 8 Dogs destroyed as having been exposed to infection 14	Outbreaks reported 31 Animals attacked 55	

Glanders in London—59 outbreaks, 81 cases.

SCOTLAND.

None	Outbreaks confirmed 7 Swine slaughtered 65	Outbreak reported 1 Animals attacked 2	Cases reported 1	Outbreaks reported 7 Animals attacked 9	

IRELAND.

None	Outbreaks confirmed 28 Animals attacked 212		Dogs 27 Other animals 8 Destroyed, having been exposed to infection 75	Outbreaks reported 1 Animals attacked 1	

THE MINISTER OF AGRICULTURE IN EDINBURGH.

MR. WALTER H. LONG, Minister of Agriculture, on Wednesday, 21st October, made what has come to be regarded as an annual visit to Edinburgh, for the purpose of conferring with Scottish agriculturists on questions affecting their interests. In connection with the visit there was a conference in the forenoon of agriculturists from various districts of Scotland, and in the afternoon the right. hon. gentleman was present at a meeting where several resolutions were discussed, and in reply to which he expressed his views.

CONFERENCE OF AGRICULTURISTS.

A meeting of agriculturists, under the auspices of the Scottish Chamber of Agriculture, was held in the hall of the Highland and Agricultural Society, George IV. Bridge, in the forenoon. There was a large attendance of members of the Chamber and of affiliated societies, the gathering being representative of almost every district of Scotland. Mr. Alex. Glendinning, Newmains, Kirkliston, President of the Chamber, occupied the chair, and delegates were present from forty-one Agricultural Societies.

The CHAIRMAN alluded to the importance and representative character of the meeting, and said their object was to come into the closest touch on all questions affecting their interests with the Government of the day.

Many subjects directly affecting the welfare of agriculturists were discussed during the meeting, and at a conference with the Minister of Agriculture held at a later period of the day. We subjoin those of more immediate interest to our readers.

Tuberculosis.

The CHAIRMAN moved the first resolution on the programme :—

> "Resolve to lead evidence before the Royal Commission on Tuberculosis in favour of tuberculosis being scheduled under the Diseases of Animals Act, and compensation paid where the carcases of apparently healthy animals are condemned as affected with that disease."

This question, he suggested, had been thoroughly thrashed out, and in its broadest aspect there had been a concensus of opinion fairly pronounced concerning it. At all events, he thought they would be at one on these two facts—that they should have tuberculosis scheduled under the Diseases of Animals Act, and that where animals were slaughtered in the public interest, farmers and others should be indemnified by the Government for their loss. Their purpose on the subject was as far as possible to arrive at unanimity, so as to present a united front before the authorities.

Clearing-houses for Dead Meat.

Mr. HUTCHISON, Beechwood, Perth, moved that the Government should be asked to introduce legislation for requiring local authorities to establish clearing-houses for dead meat, with properly qualified veterinarians as inspectors. He understood, he said, that a gentleman present intended to move that the use of these clearing-houses should be optional, and not compulsory, but he thought the conference would agree with him that it was not optional but compulsory measures which were required. He held strongly that they should have clearing-houses at all large centres, and that all the meat intended for public consumption should pass through these houses. Only recently a farmer in his own district, after having an animal examined by his veterinary surgeon, and getting it certified as quite good, sent the carcase to Glasgow, where it was condemned, with the result that the sender very narrowly escaped imprisonment. The only solution of the difficulty was the establishment of clearing-houses in all large centres, with properly qualified inspectors.

Captain CLAYHILLS HENDERSON seconded the resolution.

Mr. HOGG, flesher, Edinburgh, objected to the resolution on the principle that the whole traffic in meat should not be made to pass through these clearing-houses because of a percentage of it which was unsound. He quite agreed that there should be inspection, but held that it was quite unnecessary that all meat should pass through the clearing-houses. That would be harassing to those in the trade, and injurious to the meat.

The resolution was agreed to—the word "veterinarian" being deleted on the suggestion of the Rev. Mr. Stuart.

The marking of foreign meat.

Mr. THOMAS GORDON DUFF of Drummuir, Keith, proposed the second resolution :—

> That with reference to the [report of the Committee of the House of Lords on the marking of foreign meat, Her Majesty's Government should introduce a Bill to prevent foreign and colonial butcher-meat from being sold as home produce, to the prejudice and loss of the home producer.

Mr. DAVID MORGAN, South Mains of Ethie, Arbroath (vice-president of the Arbroath Farmers' Club), seconded the resolution, which was adopted unanimously,

Dinner to Mr. Long.

In the evening the President of the Board of Agriculture was entertained to dinner in the Royal Hotel, Prince's Street, by the Scottish Chamber of Agriculture and associated district societies. There was present on the occasion a representative company of over 120 gentlemen. The Hon. Thomas Cochrane, M.P., hon. president of the Chamber, occupied the chair, and the croupier was Mr. Alexander Glendinning, New Mains, the president. The loyal toasts having been proposed and responded to,

The CHAIRMAN next rose amid applause to propose the toast of the evening —"The President of the Board of Agriculture." They were greatly indebted to Mr. Long, he said, for coming amongst them at so much personal inconvenience to himself, and giving them the privilege of his advice and society. Mr. Long presided over a most important Department, because agriculture still remained, and he (the chairman) hoped it would long remain, the most important industry in this wealthy and prosperons country. This industry was looked after by the Board of Agriculture, a Department which had many duties to perform of a difficult and delicate character. It required no ordinary man to give satisfaction as the head of such a Department, and he believed that no statesman in recent days had given such general satisfaction as Mr, Long, or deserved so much credit. It was greatly to the credit of the Department the successful manner in which it had endeavoured to combat the active enemies which were always alert and ready to attack our flocks and herds. Mr. Long had shown the courage of his convictions, and he (the chairman) hoped and believed that the result of the measure recently introduced by Mr. Long would be that disease would be kept at arm's length, and that our flocks and herds would be safeguarded in the future. As further showing Mr. Long's energetic conduct of the Department, he had agreed to receive advice from various correspondents throughout Scotland; and when he mentioned that in the course of the afternoon, it occurred to him (the chairman) that he was a rash man, because he announced that he was to pay those correspondents.

Mr. LONG had an exceedingly hearty reception when he rose to acknowledge the toast. He thanked them, he said, for the kindness with which they had been good enough to receive him that evening, and the Chairman for the

generous terms in which he had proposed his health as President of the Board of Agriculture. They at the Board of Agriculture did their best to keep themselves on a level with the times in respect of the agriculture of the country. One of the commonest complaints made about public departments was that they were governed by what was called "red-tape." One complaint frequently made was that a public department of the State would never act without an undue regard for precedent. He was very pleased to say that in the Board of Agriculture, whatever their faults might be, there was no just charge which could be laid against them on the score of "red-tape." They were most anxious to meet the wishes and demands of agriculturists all over the country, and they entirely recognised that agriculture was an industry which was conducted upon different lines and upon a different system to those which obtained in many other of the industries of the country. They fully recognised that they must go more than half-way to meet the requirements of those whose interests they had to safeguard. The Chairman had alluded to some of their duties in regard to the protection of the flocks and herds of this country from disease, and also to their duties in connection with swine fever. Well, so far as the flocks and herds of this country went, he was glad to say that they were able, during the last session of Parliament, to pass a measure which was intended to protect the cattle and sheep of this country from disease, and which would, he believed, have that result. It met with opposition, and very natural opposition ; and he desired to bear his testimony there to the frank and fair and courteous manner in which that opposition was offered to him in the House of Commons. It was a *bona-fide* opposition. Many of those gentlemen who spoke in the House of Commons against his Bill spoke in the direct interests of their constituents, and of those whose interests they were sent to Parliament to protect. They put their case with absolute fairness, clearness, and great ability. Parliament saw fit to accept the view they took as a department of the requirements of the moment, and he hoped and believed that it would be found that, while they had protected the breeders of the country from the risk of disease, they had done no permanent evil, although they might have done a temporary injury to the feeders and grazers of the country. He believed, if they would only give the breeders confidence, only enable them to understand that they would have no risk from disease, that they would find that whatever might be the vacuum created by the want of foreign importation, it would be rapidly filled up by home-produced stores, and he was confident that, whatever his own predilections might be, if the breeders at home could produce store cattle required for feeding and fattening in this country they would be doing a double-handed good, because they would not only enable the grazier to carry on his industry, but would give an impetus to the breeder to produce his cattle. He was confident of this, that it was most important that the breeders of this country should be encouraged to increase the stock of cattle. He had seen something himself in his own part of the world—in Wiltshire —of the effects of disease. He had seen his own part of the world ravaged by disease, and he had seen what was worse than the immediate effects of the ravages of disease—he had seen the terrible feeling of depression and terror which took possession of the breeder. He (the breeder) felt that he was on unsafe ground, that he was on ground which might give way under him at any moment, and that however great the energies that might be put forward, however great the capital he might expend and the trouble that he might devote to his industry, at any moment the whole of the profits might be taken away from him by a cause over which he had no control. He did not say that by shutting the country to imported live cattle they were absolutely eradicating disease but he did declare—and statistics and experience bore

out what he said—that they were reducing the risk of disease to the smallest possible degree. With due care on the part of the officials of the Department, and with the precaution now made statutory, they would be able to make this country a healthy country as regarded stock; and, if that was the case, they would be able to give a greater incentive to breeders. Let him put this to them in the very plainest terms in connection with some of their recommendations. That day, by the Highland Society and by their own Association, he was asked on behalf of the Government to prevent foreign meat competing with British meat. Well now, he wanted to ask them a very simple question. He wanted to ask those who were opposed to the measure he introduced this session for the prevention of the importation of live cattle, what was the distinction between selling an animal that was bred and fattened abroad as English meat, and buying an animal which had grown to maturity, of two, or three, or four years old, in a foreign land, was then landed in Scotland, and fed upon various foods—not all of them grown, he might remark, within the British Empire—and sold as Scottish beef in the London market? If they were to impose these restrictions against unfair competition, they must not stop at meat which was grown and fattened abroad and sold here. They would, in common fairness, be called upon to prevent a man buying a four-year-old beast grown abroad, and which had put on a certain amount of beef at home—in Scotland or England—and selling it as first-class Norfolk steer or a fine prime Scottish ox. That animal might have some Scottish fat upon him, but he would have done all his growing in another part of the world. That was an illustration which would show that the difficulties in the way of preventing foreign competition were not so small as they might at first sight appear to be. They would be called upon to go into very different fields if they were going to prevent the foreigner competing with them by selling his produce as his own. And he believed the best line to adopt was to take care that the British farmer in England, Scotland, Wales, or Ireland had as absolute a protection against disease in any shape or form as could be given to him, and that there was in that way given to him every possible impetus to expend his capital, to exercise his energy, and to employ his industry in producing the very best animal he could—breeding it in a breeding country, fattening it in a fattening country, putting it into the market as the home-grown article, and selling it at the best price he could command. He had for the second time the privilege of attending their gatherings in Edinburgh. He had come there in order to take counsel with them, and in order to ascertain what they desired should be done. He was not able to agree, as they would readily understand, with every suggestion made to him. And because he did not agree, they would not think that he was not impressed with the arguments brought before him. It was very valuable for the Minister of Agriculture, for the time being in charge of the Agricultural Department, that he should be able to take personal counsel with agriculturists in every part of the country, and to ascertain from them what were their views and what were their wants. If he did that, he was in a better position to present his cause to his colleagues and fight it through Parliament. Personally, he had enjoyed immensely the privilege of coming to Edinburgh last year. He had that day gathered most fresh and valuable information. If his presence, and the presence of his colleagues in the Board of Agriculture, in Edinburgh, was matter of gratification, or was of any advantage to Scottish agriculturists, they had found the fullest reward for any trouble they had taken. At the same time, he might say for them, as for himself, that they felt it was extremely difficult to discharge satisfactorily the duties which appertained to the Agricultural Department. In almost every other Department of the State they got an immediate and a direct return for the legislation which was

carried, or for alterations which were effected in the conditions in which a particular industry was carried on; but every agriculturist knew perfectly well that the good that could be done by legislation or administration to agriculture was really infinitesimal. The industry was one which was carried on under the greatest possible difficulties. They had to contend with a variety of circumstances which made it almost impossible, some of them thought, to carry on their industry satisfactorily. They had the enormous developments of science in the shape of steam and telegraphy; they had all the fields of the world opened up to compete with them; there was every facility offered to the foreigner to put his produce in the market in competition with their own; they had the never-ceasing demand for cheap food and cheap produce of all kinds; and no man—he did not care how keen an agriculturist he might be—who had taken the trouble to read the history of his country during the last fifty years could possibly regret that food and clothing had become cheaper in price and better in quality for the use and advantage of the working classes of this country than they used to be. At the same time they must realise that all they could do for agriculture, either as a Department or as practical agriculturists, was to watch every single point of the industry to see how they could put a stitch in there, or give a helping hand here; and if they were to act as two separate bodies—a Government Department trying to interfere with agriculturists, agriculturists trying to check a Government Department—they would do no good at all. But if they would work together, and if by conferences of the kind they had held that day, or a festive gathering such as he attended that night, or in any other way, they could bring the agriculturists of this country into closer and closer touch with the Agricultural Department, and get them to realise that what the Department wanted was to serve and help them, and not to dictate to or interfere with them, then by the means of legislation or administration they would be able to do some little thing to help an industry which had suffered long, and suffered seriously, and which had borne its trials with a courage and heroism which found few parallels, he believed, in the history of the industries of this country. The Department could not do a great deal, but he thought they could do something. He spoke not for the head of the Department, but for those permanent officials to whom he had referred, and for any successor who might take his place, when he said that they of the Agricultural Department realised how great was the industry over whose interests they were called upon to preside, how closely it was bound up with the general prosperity and happiness of the country. They did not want to win successes in the House of Commons, or in Parliament; they did not want to prove that their Department was a great Department, which could do great things. What they wanted was to interwine themselves as a Government Department with the working agriculturists of the country, and to lend to them, if they would accept of it, the benefit of their official experience, in order that between them, as officials in Whitehall, as members of Parliament in Westminster, and as working practical agriculturists throughout this island, they might do something to restore the great national industry of this country to the position it once happily occupied, and which, he believed, it would occupy again—the position of being the first industry in the greatest Empire the world had ever seen. If they could achieve an end such as that they would feel that they had not worked in vain; and he hoped and believed, putting aside any part he might play in the work of the Department, that they had, in the officers of the Department, those who, if they would only ask and trust them, would not spare themselves in their efforts to assist them.

TUBERCULIN IN SWITZERLAND.

WE present our readers with a translation of an interesting article contributed by M. Rossignol to *La Presse Vétérinaire*:—

I have just received the interesting report concerning the contagious diseases of domestic animals, published by the Federal Agriculture Department of Berne (Switzerland), and I there find a resolution of the Federal Council relative to the measures to be taken against tuberculosis of the bovine species. This resolution I submit to the consideration of the members of the committee on epizootics and of my *confrères*. Everyone will see that, while we make use of evasions, the countries surrounding us take prompt and practical decisions. Yesterday it was Belgium, to-day it is our friends the Swiss who set us the example.

CIRCULAR OF THE FEDERAL COUNCIL OF SWITZERLAND.

To all the Confederated States concerning the struggle against Tuberculosis of the Bovine Species (24th July, 1896).

"We have the honour of remitting to you a copy of our decree of the 24th current, concerning the struggle against tuberculosis of the bovine species, with the request that you may look to its execution.

"We have taken this resolution in consequence of the numerous petitions addressed to us by cantonal governments and agricultural societies, demanding that tuberculosis, which is now known to be a contagious disease transmissible from man to animals, and *vice versâ*, should also be combated by the sanitary authorities, the more so because to-day we possess in tuberculin an excellent means of diagnosing the malady while still in its infancy.

"We consider that all the prescriptions of our laws concerning epizootics cannot yet be applied to tuberculosis; that in consequence it cannot be inserted in the list of epizootics, to be dealt with by legal prescriptions, but that there is occasion to take special measures against the scourge.

"We therefore restrict ourselves to offering, on the conditions we judge to be necessary, to deliver to you gratuitously tuberculin, and to reimburse to you the half of the expenses which inoculations with this substance will occasion you.

"It is necessary, *to prevent abuse, that tuberculin be delivered only to veterinary surgeons holding diplomas, and only be employed by them according to regulations.*

"When a proprietor requests inoculation, it *will have to be practised on all the cattle he possesses*, and *not on one or two head alone*. There will not result therefrom, as far as he is concerned, any greater expense, and he will be able to avoid contagion and extension of the disease by separating from the others the animals that *react*.

"The reports on the inoculations will be presented at the same time as the bulletins on epizootics; they control alone the use of the tuberculin furnished by the Confederation.

"The distinguishing brand with which the *animals that react* are to be marked, *prevents the seller from charging too high a price for them*, and the *infection from spreading*.

"For the moment, there is no intention of taking other measures against suspected animals, for the reaction to inoculation does not permit of our recognising the degree of the malady. Certain animals may *react strongly*, and *yet be good for breeding, for the production of milk, and for fattening*. Yet proprietors must be recommended to separate them with the greatest care from the sound animals, and, by boiling their milk, to make it harmless as well for man as for the young animals they rear; also not to hesitate too long about having them slaughtered.

"As for the sound animals, they may be marked or not with a distinguishing brand. We, however, authorise our Department of Agriculture to furnish you, if you desire it, *for half the cost price*, with particular brands, and the necessary instruments for applying them."

The preceding resolution is not perfect, far from it, but after all it constistitutes a real progress; it flavours slightly of the discussions which took place at the Veterinary Congress at Berne in 1895, and of the opposition which some Swiss veterinarians, and those, too, not the least qualified, gave to tuberculin. It shows, however, that the Federal Council has followed with attention the deliberations of the International Veterinary Congress; and has in a great measure taken them into account. I am convinced that when our excellent neighbours have put tuberculin to the proof on a large scale, they will not be long in completing the resolution of the 24th July, 1896.

In this resolution and in the circular accompanying and embodying it, there are things that are good to retain, and that are worthy of receiving attention in France. In the first place I will speak of the gratuitous supply of tuberculin to the cantons making a demand for it. Why should the same thing not take place with regard to our departments? It would be easy, I believe, to have tuberculin prepared in our three veterinary schools.

Not content, however, with distributing tuberculin gratis, the Federal Council still further binds itself to defray half the expenses occasioned by inoculations of tuberculin. It is true that it imposes its own conditions, but these could be made in such a way as not to displease us veterinary surgeons if they were adopted by our authorities here in France.

The Swiss Government knows and appreciates at their true value the services rendered by veterinarians; besides it has rid them of quacks by regulating the exercise of the veterinary art, and it acts logically in deciding that tuberculin shall be delivered to veterinary surgeons only, and that these latter shall alone be authorised to proceed to inoculation. Amongst us in France, for a long time past, the intrusion of empirics into the practice of vaccinations has been deplored; it has been acknowledged in high places that it was dangerous, but the decree which ought to prohibit the mischievous interference of sham surgeons has still to come—if it ever does.

In what concerns the delivery of vaccines in general, and of tuberculin in particular, we have indeed a semblance of satisfaction; the Pasteur Institute, I have been told, no longer delivers its vaccines and detective liquid to any but veterinary snrgeons. This is a step in the right direction, but it has not always been thus, for I used to receive from many quarters complaints that were fully justified. Malicious proprietors, annoyed at this measure, immediately avoided the difficulty. They looked for and found complaisant veterinary surgeons who gave them certificates with which they were able to silence the scruples of the Pasteur Institute. Veterinarians who act thus are bad colleagues. But have not all professions their black sheep? I consider that the Pasteur Institute ought not to deliver its vaccines, nor its mallein and its tuberculin, except to those whom it knows to be veterinarians, and who address their demand direct to it.

In deciding that the inoculations shall be practised conformably to the instructions which the Federal Department shall cause to be decreed, the Swiss Government has acted wisely. It ought to be the same in France for all vaccinations and inoculations. The Epizootics Committee might be instructed to draw up instructions concerning the technique of the inoculations and vaccinations, and the precautions to be taken to sterilise the syringes. Many veterinary surgeons are at a loss when it comes to practising an operation they have never performed before, and it would be useful to enlighten them. These instructions should be sent to all the préfets; these latter would have them printed in their bulletin and sent to all the veterinary

surgeons of their department. These instructions ought to comprise as many headings as there are contagious diseases susceptible of being diagnosed by the aid of detective liquids, or preventively combated with vaccines. If this were done, I believe veterinary surgeons would be rendered a real service.

I return to the resolution of the Federal Council in order to examine an ordinance which shows the great practical sense of the Swiss Government, namely, that which orders all proprietors who ask for tuberculination to have this operation practised on the whole of the cattle they possess, and not on a few head only. We are there and then certain about the number of infected animals, and from that moment it is easy to take measures of protection. Yet it is to be regretted that this decree has not foreseen the case in which tuberculosis is revealed by a practical autopsy, and prescribed the obligatory inoculation of all the animals of the stalls or boxes from which the tuberculous animal came. I venture to hope that this gap will be filled up by the French Parliament when it finally determines to take up the matter seriously.

The brand on the ear rendered obligatory for all animals that have reacted, is a happy innovation, which will introduce into the traffic in cattle an absolute security by forcing the sellers to be honest in spite of themselves, and stopping the disease from spreading, for, apart from the butchers, everyone will abstain from buying justly suspected animals. But where I am not of the same mind as the promoters and authors of the circular, is where they claim that *certain animals may react strongly, and yet be good for breeding, milk-production, and fattening.*

I believe, and shall continue to believe till proof to the contrary is forthcoming, that an animal which has reacted ought to be rigorously secluded from reproduction. I know quite well that examples have been cited tending to foster the belief that the offspring of tuberculous cows could be bred, but these examples tell me nothing of any value. And so I consider that it would be wiser to fatten these suspected animals and deliver them into the hands of the butcher, provided the lesions they present are not generalised.

For the same reasons I consider the continued use of milch-cows suspected of being infected with tuberculosis to be a dangerous and hazardous enterprise, for it will always be difficult to compel the owners of these cows to boil their milk. It would be certainly preferable to dry up such animals and fatten them, and then have them slaughtered with as little delay as possible.

Army Veterinary Department.

Veterinary-Major J. W. Evans is placed on temporary half-pay on account of ill-health. Dated 9th October, 1896.

W. S. Anthony, Gent., to be Veterinary-Lieutenant in succession to Veterinary-Major J. W. Evans. Dated 14th October, 1896.

Veterinary-Captain William Alfred Crow to be Veterinary-Major. Dated October 2nd, 1896.—*Extract from "London Gazette" of October 6th*, 1896.

Veterinary-Captain D. C. Pallin has been transferred from India to the Home Establishment on 7th instant, and posted for temporary duty with 3rd Dragoon Guards at Shorncliffe.

Veterinary-Lieutenant R. H. Holmes transferred from Aldershot to Dublin for temporary duty.

Veterinary-Lieutenant W. B. Edwards embarked for India on 7th instant, in s.s. "Dalwara.'

Extracts from Foreign Journals.

VERMIFUGE WITH A BASIS OF PETROLEUM.

M. Boulay writes as follows to the *Recueil de Médecine Vétérinaire*:—"Several of my professional brethren have reported cases in which they blame petroleum for having caused the death of horses affected with skin-disease, which they had treated with this substance. For my part I very often use internal medicine having a basis of petroleum, and I have never had any accident. This is how I came to use it: I went one day to inspect a team of horses in the stable of a dealer, and he told me that he was in the habit of treating horses suspected of intestinal worms with a mixture of his own; he explained that he poured into a champagne bottle a wine-glassful of petroleum, and the same quantity of olive-oil, then he filled up the bottle with plain cold water, and administered the whole of the mixture at one draught to the horse fasting. Since then I have used this curious mixture constantly as a vermifuge, and have always had the most gratifying results. I presume the olive-oil neutralises or lessens the toxic effects of the petroleum. In any case, we have here a new vermifuge that is at once innocuous, cheap, and always ready at hand. I should like to see the effect of petroleum tried on some experimental horse, to which gradually-increasing doses of pure petroleum should be given until the lethal dose was reached."

THE INJECTIONS OF CHLORIDE OF SODIUM IN SHOULDER LAMENESS.

In the *Clinica Veterinaria*, Dr. A. Trinchera records a number of experiments which he has made at the Surgical Clinic of the Milan Veterinary School, to test the value of the saturated solution of sodium injected subcutaneously or intramuscular; five to ten grammes were used in each injection, and from five to eight injections made alternately in the shoulder region, posterior spinatis muscle, arm, and antibrachial region. Extensive myositis followed these injections, in some cases abscesses. Relief was also obtained. The conclusions of the excellent report of Dr. Trinchera are as follows:—(1.) The subcutaneous injections produced a phlegmon more or less severe and diffuse, according to the quantity of the solution used; intramuscular injections gave rise to a myositis, proportionate to the quantity of liquid used. (2.) With perfect antiseptic measures, both injections can be used and the formation of abscesses avoided. (3.) Subcutaneous injections give rise to a phlegmon which acts as a powerful revulsive. Intramuscular injections produce an inflammation of the muscles and also of the deep tissues, whose revulsive action not only facilitates the reparative processes, but also produce a greater immobility. (4.) From the cases observed, no specific action can be granted beyond its irritating power. (5.) Subcutaneous injections have produced less severe effects than the intramuscular, and for that reason they will give rise to a direct effect on the organs of locomotion of the region, which will be better immobilized. (6.) Subcutaneous injections, to resume, are better indicated in recent and slight cases; intramuscular in chronic cases with muscular atrophy. (7.) The revulsion and immobilization obtained by the injections, especially the intramuscular, are superior to those produced by all other means recommended. (8.) If the effects of the injections are greater than those of other remedies, it does not follow that it is an infallible panacea for all shoulder lameness. (9.) At any rate, when the injections are successful, the lameness does not subside until the phlegmon, the abscess or the myositis have disappeared. (10.) Taking in consideration the other means employed against

shoulder lameness, it seems that the duration of the treatment is about the same as in the injections of chloride of sodium, and more if used in the muscles. The injections, however, present the advantages of not leaving any blemishes.

ENZOOTIC DISEASE OF THE DIGESTIVE ORGANS.

Chief Veterinary Surgeon Hirsemann, of the 10th regiment of Uhlans, writes as follows to the *Zeitschrift für Veterinärkunde*:—"In June last a troop-horse died, showing symptoms of colic. It was found that nearly all the horses of the same troop were affected, and a *post-mortem* examination of the dead animal favoured the belief that all the attacks were due to one cause. Even during the preceding winter I had noticed that the horses of two squadrons were no longer feeding regularly. The first victim to the disease was ill only a very short time; in the second case, which I was able to treat in time, I found pretty high fever; it could not, therefore, be ordinary colic. In the month of June, 85 horses in the regiment turned ill, and, of these, 40 showed fever; these 40 showed the following symptoms of the disease, namely, want of appetite, listlessness, sometimes an inclination to stagger or to place the limbs in extraordinary positions; this was accompanied by a dull, staring, abstracted look. Temperature 102° to 104° Fahr. The fever lasted generally only 24 hours, often only eight, without typical course. The want of appetite lasted six to eight days, and then the horse would begin gradually to take his food again. The conjunctivæ were in nearly all the animals of a reddish yellow; when the intestinal inflammation was serious, the mucous membranes were venously reddened; arteries generally soft, pulse-beat 54 to 96, heart-beat generally throbbing. In the case of one animal—a five-year-old—the whole trunk quivered at each heart-beat, and the cardiac sounds were audible wherever one placed one's ear, and this continued for hours. There were indications of uneasiness, and defecation was delayed; in one case diarrhœa was observed before the fatal termination. Only two horses died. The *post-mortem* showed undoubted disease of the digestive tract; stomach, bowels and spleen were all affected. The symptomatic indications grouped themselves partly under *Icterus gravis*, as described by Dieckerhoff, partly under ephemeral fever, which arises from irritation of the digestive organs, I am quite sure that the trouble was due to some defect in the fodder. I noticed the same kind of outbreak in a private breeding-establishment in Posen, and there I blamed the vetches that were given as fodder to the horses. The symptoms disappeared when the fodder was changed, and they returned when, in the following year, on account of a scarcity of oats, vetches were again given to the horses. The treatment I prescribed for my patients as above, was absolute rest, easily digestible food, Carlsbad salts in their drinking water, also, in some cases, opium and plumbum aceticum, with mucilage of althæa and Priessnitz poultices."

Notes and News.

THE FEEDING OF CALVES.—Writing on this subject in the *Preston Guardian*, Professor Daine, of the Harris Institute, Preston, says:—For the first month calves should have new milk, which, after that period, should be gradually diminished, skim milk being substituted fresh from the separator, if possible, as it is then warm. If the skim milk is taken from the deep setting cans or mugs, it should be perfectly sweet. Add to the skim milk

linseed gruel in the proportion of a quart to a gallon of the milk, noting the effect on the calf. It may be thought necessary to lessen the amount of gruel, and this I leave to the good sense and observation of the farmer. The linseed gruel replaces the fat, as well as adds flesh-forming matter to the milk. Let the calf have a little of the best and sweetest hay, together with a few ground oats and bran. When the cattle are old enough linseed cake can be added. If you have whey instead of skim milk, add to the whey the best linseed meal and oatmeal in the proportion of half and half. Give both with caution, and increase the amount as the calf gets older. Whey is chiefly valuable on account of the milk sugar it contains, as well as some little fat (especially if the cheese-maker has been careless in the manufacture), also for some caseous matter and mineral salts. The linseed meal and oatmeal combined will replace the flesh-forming and fatty matter that has been extracted from the milk, also adding bone-forming material.

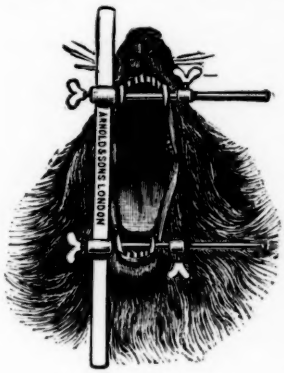
THE FOLK-LORE OF THE HORSE-SHOE.—In the course of a paper on the "Folk-lore of the Horse-shoe," by Dr. Robert M. Lawrence, read before the American Folk-lore Society, the author, referring to the talismanic history of the horse-shoe, said the theory had been advanced that in ancient idolatrous times, the horse-shoe in its primitive form was a symbol in serpent worship. Both snakes and horse-shoes were anciently engraved on stones and medals, presumably as amuletic symbols; and in front of a church in Crendi, a town in the southern part of Malta, there is to be seen a statue having at its feet a protective symbol in the shape of a half-moon encircled by a snake. Among the Romans there prevailed a custom of driving nails into cottage walls as an antidote against plagues. Both this custom and the later one of nailing up horse-shoes, have been thought by some to originate from the rite of the Passover. The blood sprinkled upon the door-posts and lintel at the time of the great Jewish feast, formed the chief points of an arch, and it may be that with this in mind, people adopted the horse-shoe as an arch-shaped talisman, and it thus became emblematic of good luck. We find that the efficacy of the horse-shoe depends not solely upon its arched shape, nor its bifurcated form; its relation to the horse also gives it a talismanic value, for in legendary lore this animal was often credited with supernatural qualities. An English myth ascribes to the horse the character of a luck-bringer, and horsemanship was in vogue among the early Celts, Teutons, and Slavs. But whatever may be the origin of the superstitious employment of the horse-shoe, its adoption as a token of good luck appears to be comparatively modern, its earliest use having been for the exclusion of witches, evil spirits, and all such uncanny things.

RESIN, or crude turpentine, is the material obtained by tapping or bleeding the trees. Spirits of turpentine is the liquid obtained by distilling the crude resin. Rosin, or colophony, is the residue after the distillation of resin. Common pitch is the residue from the dry distillation of rosin. Brewers' pitch, which is used for coating the interior of beer kegs and barrels, is obtained by stopping the distillation of resin before all the oil has been distilled. Tar is produced by distilling the wood itself, and oil of tar is obtained by distilling the tar. Each of these articles is separated commercially into several different grades, and every grade has its own name. All this material comes from the great pine belt that fringes the South Atlantic and Gulf States, Notwithstanding the clearings that have been made in the last two centuries, this is still one of the most extensive forests on earth. A pedestrian might start from Brunswick on the Atlantic coast, and without going much out of the way, walk westward to the Mississippi River without once leaving the shade of the pine forest, except in crossing the innumerable rivers. The forest is about 100 miles wide, beginning on the North Carolina coast and swerving westward along the gulf, till it reaches Louisiana. Some of the workmen live

as much in the shade as the forest-dwelling tribes in Africa, and do not emerge from the pine shadows ten times in as many years.

THE RINDERPEST.—PRECAUTIONS IN FRANCE.—Paris, October 21st. Owing to the outbreak of rinderpest in different parts of Africa, the Minister of Agriculture has framed a decree prohibiting the importation into France and Algeria of all living cattle and sheep and other ruminants from any part of Africa other than Tunis and the other French possessions. The flesh, wool, hides, bones, and horns of the animals in question, and all objects which may serve to convey contagion are included in the prohibition. At the same time, the attention of the Ministers for Foreign Affairs and for the Colonies is drawn to the urgency which exists for applying the same measures to Tunis and the other French colonies in Africa, and particularly in Madagascar, in order to preserve them from the danger which threatens them, and prevent the introduction of the disease.

NEW MOUTH-GAG FOR DOGS, CATS, ETC.



I BEG to enclose you a photograph of my "dog's mouth-gag or speculum" in use on a collie.

It is easily fixed and retained in the mouth behind the incisors, if the jaw are separated to their fullest extent. The advantages I claim for it are:—

(1) The mouth is distended so that the jaws are immovable, acting like a twitch would be to a horse, by diminishing the resisting power of the animal.

(2) The interior of the mouth, including the tongue, teeth, tonsils, soft palate, etc., as well as the pharynx and larynx, can easily be examined.

(3) There is only one long upright bar to the instrument, the other side being left free so as not to confine manipulatory movements on the part of the operator.

(4) It can be used on all animals from the size of a St. Bernard to a cat.

MESSRS. ARNOLD & SONS, London,
are the Makers.

Kensington. HENRY GRAY, M.R.C.V.S.

Reviews.

OUTLINES OF VETERINARY ANATOMY. PART II.—THE TRUNK. By O. CHARNOCK BRADLEY. 4s. (London: Baillière, Tindall & Cox.)

The second part of this small handbook of veterinary anatomy has now reached us. It is uniform in style and get-up with the first part which we noticed a few months ago. It treats in a concise manner with the Trunks of the horse, ox, sheep, pig, and dog, and will no doubt be of considerable use to the student in the dissecting room, and on the eve of his professional examination.

TABLES OF DENTITION, ARRANGED BY E. L. STROUD, M.R.C.V.S. Price 6*d.* London: Simpkin, Marshall, Hamilton, Kent & Co.

In this little work the dentition of the Horse, Ox, Sheep and Pig is presented in the form of simple explanatory diagrams, which enable anyone at a glance to observe the process of dentition in each of these species, from birth to maturity. For the use of the student or the practitioner, we have nothing but praise to bestow on this production. It is handy for the pocket, both in the point of expense and convenience for reference.

Correspondence.

To the Editor of THE VETERINARY JOURNAL.

DEAR SIR,—Will you kindly permit me to point out one or two printer's errors which occurred in my article on "Teeth" in this month's number of your journal.

In line 4 for "elaborate" read absolute.

On page 255, line 5, for "carnivora" read carnivore.

On page 255, line 36, for "Hipporion" read Hipparion.

On page 256, line 11, for "Archeopteryx" read Archæopteryx, and for "Hesperorius" read Hesperornis.

By inserting this in your next issue you will confer a favour on yours, etc.,

O. CHARNOCK BRADLEY.

Obituary.

Geo. Longman, Thornton Heath	May, 1855.
J. Thornton, Jun., Croston, Lancs.	April, 1868.
F. Talbott, Whatton, Notts.	May, 1827.
J. Barker, late Sheffield	May, 1856.
J. Holmes, Bourne, Lincolnshire	May, 1844.
B. Smith, Barnsley (Fellow, April, 1863)	July, 1886.

Communications, Books, Journals, etc., Received.

Recueil de Médecine Vétérinaire (Alfort); La Presse Vétérinaire (Paris); L'Echo Vétérinaire (Liége); Annales de Médecine Vétérinaire (Brussels); Berliner Thierärztliche Wochenschrift (Berlin); La Clinica Veterinaria (Milan); Il Nuovo Ercolani (Pisa); La Revista Veterinaria (Buenos Aires), La Gaceta Médica de Costa Rica; The Veterinary Magazine.